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Improvement in Seed Planters.

The annexed engravings represent the Seed Planter, of Samuel Witherow, of Gettysburg, Pa., (with his recent improvement,) for which a patent was granted on the 18th of January last year, to him and his son, Wm. H. Witherow.

Figure 1 is a perspective view, and figure 2 is a horizontal view of the hopper and cylinder. Tne same letters refer to similar parts on the two figures.

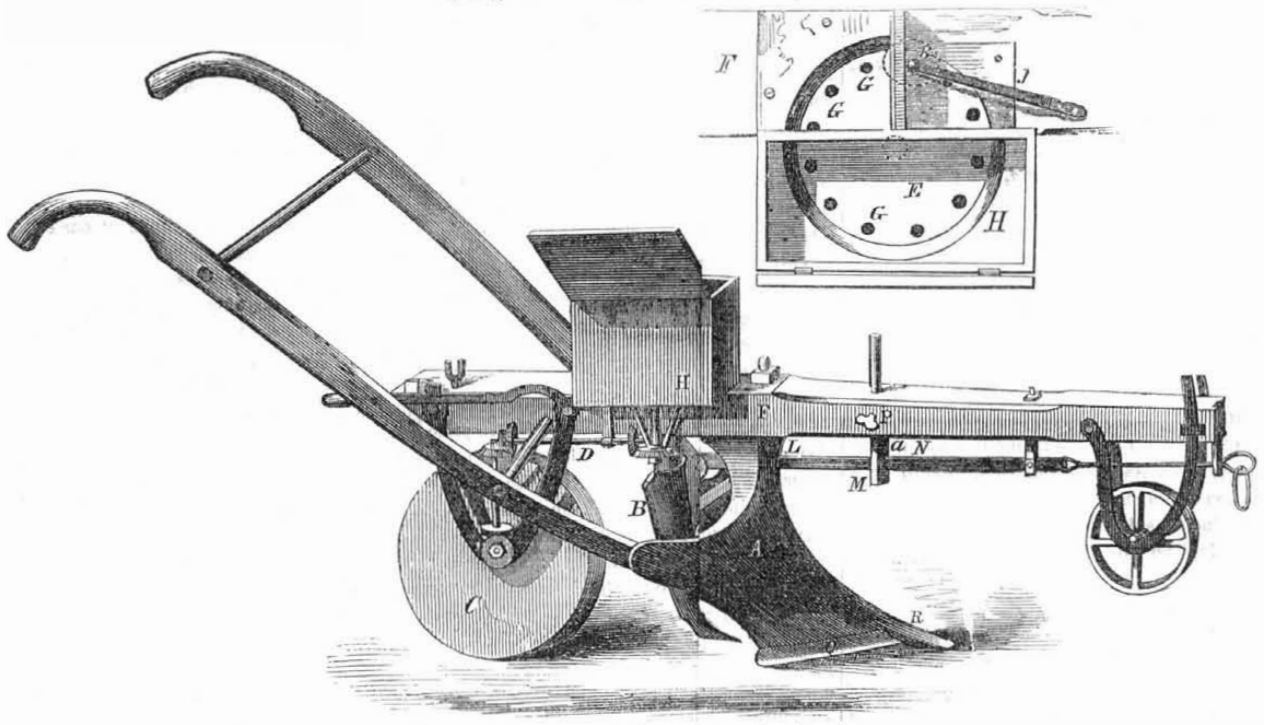
The nature of the improvement relates to two parts. 1st. The manner of regulating the seeding tube and supporting the drag bar to which it is attached, by passing the latter through a slot in the mold board. 2d. The new improved feature relates to placing the main seed box at the side of the beam to cover one-half of the seed disk, so as always to expose six or seven holes to the seed, and combining this with a gauge spring to prevent any of the seed from being carried round edgewise and broken and thereby rendered useless.

The mold board, A, is double, and has a share adapted to it accordingly, dividing the furrow, and throwing the earth equally on both sides of the mold board. The share has also two wings, Q, to correspond with the mold board having the point, R, in the center thereof. The mold board, share, wings, and point, may be constructed in any suitable manner or form, and of any size required. The corn or other grain to be planted, is conveyed to the furrow in the ground, immediately behind the mold board through a tube, B. This is followed by a roller, C, which is connected to the beam by two semi-circular irons, through which the gudgeons of the roller upon which it revolves extend. The progress of the planter puts the roller, C, in motion, and which in turn operates the seeding cylinder, E, by means of the cranks, D, (there being one on each side of the planter) or by any other well known means of gearing.

The seeding cylinder, E, may be of any suitable size, and is let into the beam, F, about one half of its diameter. There are circular holes or cells, G, in said cylinder, to take in the corn or other grain, and which may be made adjustable in size, by the usual method of inserting a screw which can be raised or lowered at pleasure; and as the cylinder revolves it conveys the grain from the hopper, H, down into the tube, B, and from thence it passes into the ground. These cells may be such in number as to drop the grain at any desired intervals.

The drag bar, N, is attached by one of its ends to the clevis bolt and passes through an opening, *a*, in the adjustable hanger, M, which passes up through the beam, and may be raised or lowered at pleasure for adjusting the seeding tube, B, and held firmly, when adjusted, by the set screw, P. Through the neck of the mold board is cut a slot, L, through which the drag bar, N, also passes, and which gives it lateral strength and support, and to the rear end of the bar, N, is secured the seeding tube, B, in any well-known manner, to prevent it from breaking when any obstacle presents itself to it.

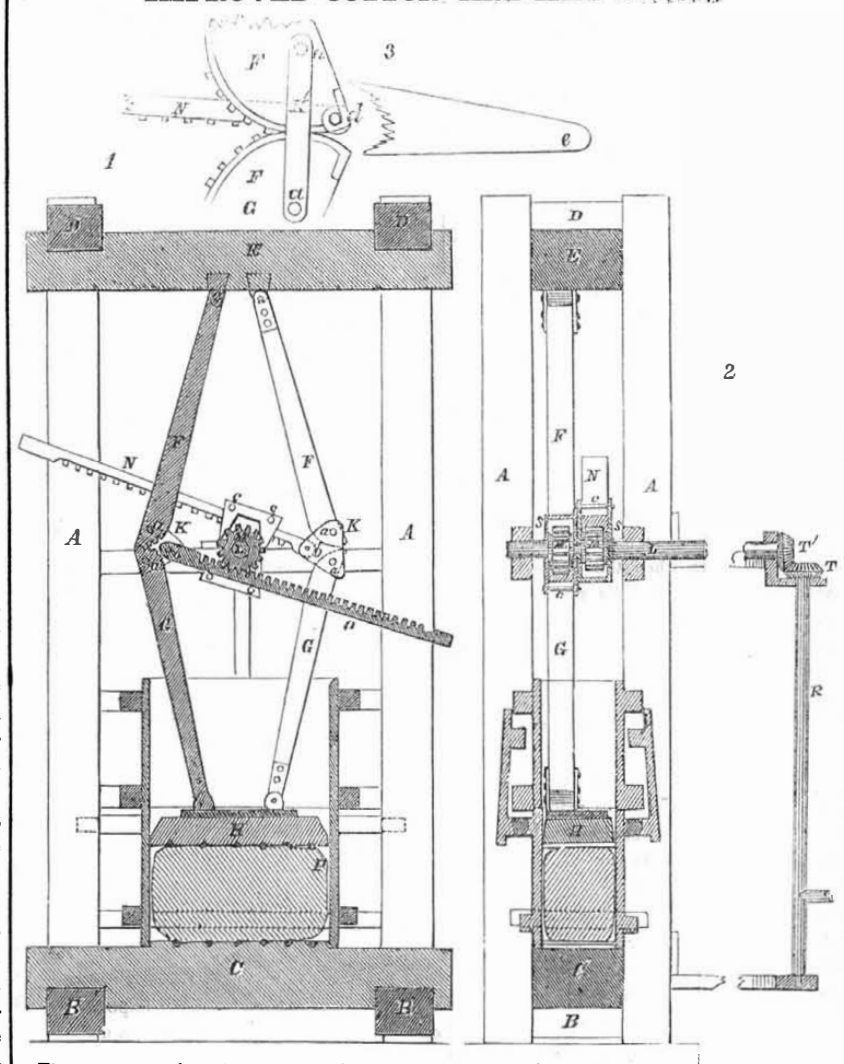
Fgure 1. WITHEROW'S SEED PLANTER. Figure 2.



The hopper, H, is placed at one side of the beam, and covers one-half of the disk, E, one-quarter of which runs out and is exposed so as to show how the seed feeds in. The hopper fits closely to the top of the evolving grain cylinder, and as this cylinder revolves it is carried under the plate and sprig gauge, B J. When a hole, G, with a grain of seed in it arrives above, B, it drops down into the furrow. It is a simple and good seed planter.

More information may be obtained by letter addressed to the patentee at Gettysburg.

IMPROVED COTTON AND HAY PRESS.



The accompanying figures are views of an improvement in Cotton and Hay Presses, &c., by E. L. Snow, and E. S. Hoadley, of East Hampton, Mass., who have taken measures to secure a patent.

Figures 1 and 2 are vertical sections of the press, taken at right angles to each other, and fig. 3 is a view showing a modified arrangement of levers. Similar letters indicate like parts on the figures. This press is intended principally to be used for pressing cotton on plantations, and has therefore been constructed with a view to great simplicity and durability in every particular. The nature of the improvement consists in a new mode of combining, constructing, arranging and operating a series of toggle-levers.

A A are upright posts of timber; B B are cross girders mortised to the posts near the bottom, and supporting the bed, C. D D are cross girders similar to B B, but placed near the top of the machine to receive the upward pressure upon the head, E. F G and F′ G′, in figs. 1 and 2, are two pairs of levers of wood or iron, one of each pair of which is connected with the top timber, E, and the other with the platen or follower, H, which slides in the box, P, of the press. The ends of the two levers of each pair work in contact, and are in the form of arcs of circles, and they are connected together by triangular plates, K (one on each side,) and bolts, *a a*, which pass through the levers and plates at the points from which the arcs at the ends of the levers are struck. The arc-formed ends of the levers are made broad in order to give them a good bearing upon each other, and as they roll in contact there is very little friction. The face of one arc has teeth upon it which enter recesses on the face of the other, and thus prevent the possibility of slipping. The two pairs of levers are so arranged that vertical motion is given to the follower of the press by drawing the two pairs towards each other; a horizontal shaft, L, which turns in suitable fixed bearings on the frame-work, occupies a position between them. This shaft carries two pinions, M M, which gear with two toothed rack bars, N and O, one end of each of which is placed between one pair of the triangular plates, K K, and attached by a bolt, *b*, and the other end is left free. The racks are kept in gear with their respective pinions by means of light frames, S S, whose side pieces fit easily to the shaft, L, and which have pins, *c c*, reaching across the backs of the racks. These pins, *c c*, should be furnished with friction rollers. By giving rotary motion to the shaft, L, the pinions will be caused either to draw the jointed ends of the levers towards each other, or force them apart according to the direction of the rotation of the shaft. It will be understood that the two racks and both pairs of levers could not be arranged to work in the same plane without too much curtailing the length of the racks, and therefore they are arranged side by side to allow the racks belonging to one pair of levers to pass the other pair.

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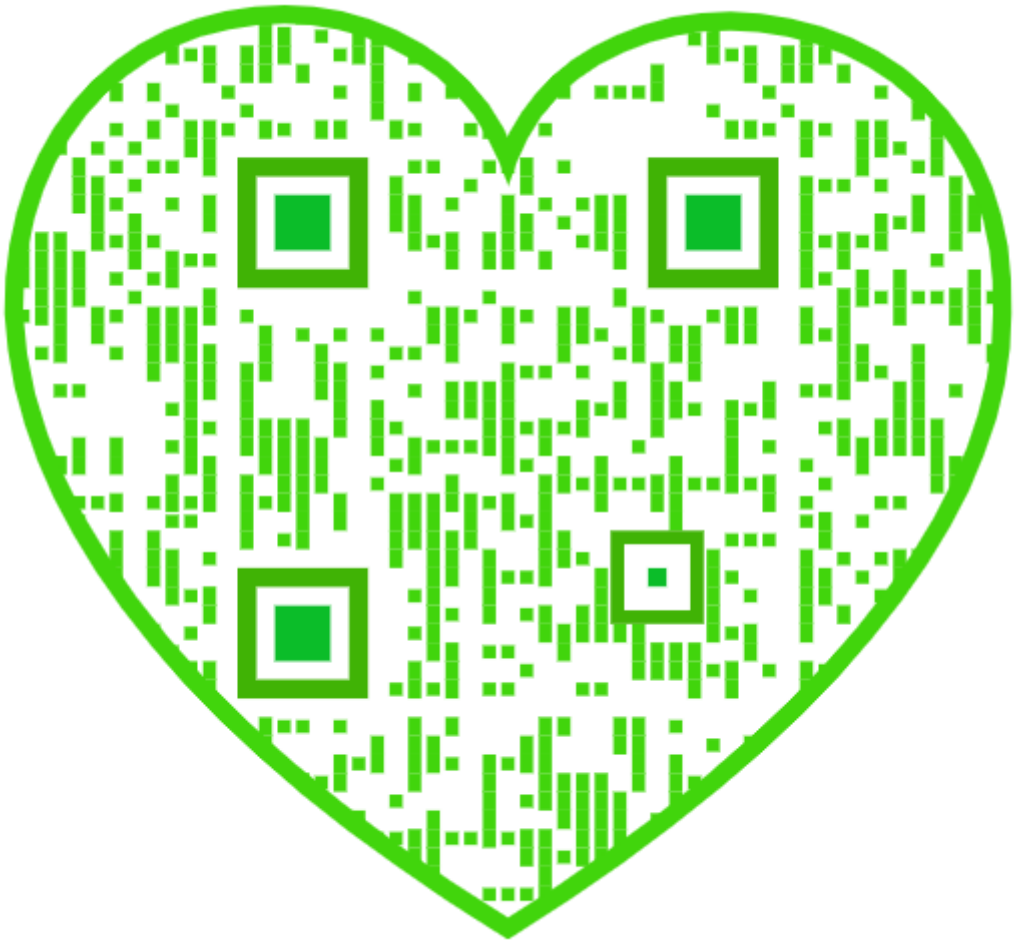

The shaft, L, may have the necessary rotary motion to operate the press communicated by any suitable means. We have represented for that purpose a vertical shaft, R, which carries a bevel wheel, T, gearing with another bevel wheel, T′ on the shaft, L.

Instead of connecting the levers by the triangular pieces, K K, as shown in figs. 1 and 2, they may be connected by links, K′, as shown in fig. 3, and the rack bar may be attached to the extremity of the lever by a bolt, *d*.

The principle of operation of these levers is the same as that of the ordinary toggle joint, but the manner of constructing the joint gives it the advantage of greater strength and almost entirely obviates the friction. The manner of applying the power shown in figure 3, gives the advantage of an increased leverage. The increase being equal to the difference in distance between *e a* and *e d*, the point, *e*, being where the lever is attached to the head or follower of the press.

More information may be obtained by letter addressed to the inventors, at East Hampton, Mass., or to Columbus, Ga., where the inventors are engaged in putting up presses to order.

Flax Industry.—No. 9.

If it had been proposed to write a history of the flax industry of the civilized world at the epoch when Napoleon offered a reward of a million of francs for the invention of the best machine for spinning flax, it is hardly probable that England would have merited a notice, yet the manufacture of flax in this country, dating, as it were, only from yesterday, has already exceeded and almost destroyed the trade and manufactures of those countries where the culture and preparation of flax has been a peculiar and favorite branch of industry from a remote antiquity.

The record of British legislation for the encouragement and protection of this branch of industry forms a curious chapter in the history of political economy, affording, as it does, such marked examples of the aim and influence of special legislation for particular objects to the exclusion or detriment of other and foreign interests. We pass over without further notice the different enactments and legislative measures, previous to the year 1700, and only specify the total amount of money expended by government from 1700 to 1777, for the encouragement of the flax industry. The premiums paid under different ordinances during this period of seventy-seven years, on thread and woven cloth, amounted to £1,295,560 sterling. In the year 1777 alone, during a period of considerable commercial embarrassment, while England was engaged in the struggle with the American colonies, the premiums amounted to $167,000, an enormous bounty, when we consider the limited extent of the business at that period.

The encouragement given assumed different forms according to the time and particular circumstances. In some cases the premiums were money, in others spinning wheels, reels, and warp beams were distributed. In Ireland, at one time, there were distributed gratuitously by Act of Parliament, ten thousand spinning wheels, and persons were also appointed to give instruction in the methods of perfecting and improving the fabrication of thread and cloth. In 1832 the bounty awarded on the exportation of linen thread, amounted to £300,000 sterling, and for some years previous had varied from fifteen to twenty-five per cent. of the value of the products exported, the scale of bounty sliding with the value of the manufactured material. In addition also to the bounties paid to the agriculturist for the growth of flax, and the premiums upon the exportation of thread, the British Government further encouraged the flax industry by high protective duties, levied upon all foreign manufactures composed of flax in whole or part. In 1840, before the rise of the free-trade theories, the following duties were established:—On linen thread 25 per cent. *ad valorem*; on woven goods other than canvas, or duck, 40 per cent. *ad valorem*; on canvas, 30 per cent. *ad valorem*.

At this period the manufacture of flax had attained to such a footing in England that a number of immense establishments were in operation, some of which had paid their original cost in a few years after their commencement, and all were in a most prosperous condition. At this time a few of the old enactments for the encouragement of the business were abolished as no longer necessary, but to make up for these innovations, and to keep up the monopoly of machine spinning, the law prohibiting the exportation of linen machinery, was still maintained, with such penalties imposed by Act of Parliament, as find no analogy except among the most barbarous and uncivilized nations. It is indeed a fact not generally known, that in England as recently as 1840, the penalty for the exportation of linen machinery was the same as for murder, burglary in the first degree, and arson. Since 1840 these restrictions and penalties have been abolished, and the duty on nearly every description of linen goods made uniform, viz., about 10 per cent. *ad valorem*.

Notwithstanding the prosperous condition of the linen business in Great Britain, government does not in the least relax its encouragement and protection when needed. The Blue Books of Parliament abound in information yearly, designed to increase the general amount of information on this subject. Private enterprize also emulates and outstrips the efforts of the government. Among other societies for the encouragement of the flax industry, one has been formed for the promotion of the same in India, especially in the Province of Bengal, and an expenditure of $50,000 has been voted as the first effort in this direction. This society in a published prospectus states that the soil of India is admirably adapted to the cultivation of flax, and that the crop is an annually increasing one, even without much encouragement. The exportation of flax seed from India commenced about the year 1845, when a single firm exported 3,000 casks. In 1850 the exportation exceeded 15,000 casks. The prospectus of the Society further states "that throughout the flax growing districts of India, from two to three crops of flax per annum, can be raised; and when it is considered that in British India millions of fertile acres remain uncultivated, that the price of labor is merely nominal (the average wages of a common laborer being less than $1,25 per month, out of which he feeds and clothes himself) and that the growth and preparation of flax is in a great measure the result of hand labor, it will be very strange if India, aided by British capital, shall not be able in a few years to surpass the whole world in the production of flax."

Another Society is established at Belfast, Ireland, under the name of "The Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland." Another Society is known as the "National Flax Association," and various local and smaller associations are organized in almost every section of the Kingdom. At the time when the exportation of machinery was prohibited by government, a society was also formed for the express purpose of aiding the authorities in enforcing the law, and so effectually were these measures, that while previous to the formation of this society, machinery could be taken out by contract with certain parties for 30 per cent. of its value, afterwards the same contrabandists would not attempt its exportion for a less price than 80 per cent. of its value. Notwithstanding, some machinery was exported to France, and placed in successful operation at d'Essonne, but no sooner were the products of this single establishment offered the market, than by a combined movement the prices of the English linens of the same description were reduced in the same market to a lower rate, obviously with the intention of strangling the enterprize in its commencement.

It was by such means as we have indicated, aided by the low price of iron, fuel, and labor, and also by the great mechanical skill of the educated operatives, and the energy of the capitalists, that the flax industry of Great Britain has been enabled to attain the position which enables it to command and control the markets of the rest of the world.

Railroad Statistics.

On page 301, in a notice of the Annual Report of the State Engineer, New York, we stated that there were only fifteen miles of railroad in operation in this State, in 1836, and that probably there were no more than 60 miles in operation on our continent. A correspondent since, suggested that there was much more than sixty miles in operation then, but could not state how many. The following statistics, by request, have been kindly furnished by Mr. Poor, Editor of the "American Railroad Journal," and afford the correct data in every particular. All of these roads were no doubt operated by locomotives in 1836, but on some of them horses alone were employed when they went into operation, such as the Mauch Chunk, in 1827.

Messrs. Munn & Co.:—*Gents.*—In reply to your note of yesterday, it gives me much pleasure to state the following statistical facts in reference to the opening of some of our earliest railway enterprises.

The Quincy Railroad, Mass., and the Mauch Chunk, Penn., were opened in 1827. In 1832, sixty miles of the Baltimore and Ohio Railroad were in operation, twenty miles of the Charleston and Hamburg (S. C. R.R.), and twelve miles of the Albany and Schenectady; making in all 107 miles in operation in 1832.

Annexed please find a list of such roads as were opened previous to 1836. It will be observed that some of them have since been abandoned.

NAME.	YEAR OPENED.	MILES.
Philadelphia and Columbia, Pa.	1834.	82
Alleghany Portage,	" "	36
West Chester,	" "	9
Philadelphia and Trenton,	" 1833	30
Mauch Chunk,	" 1827	9
Room Run,	" 1833	5
Little Schuylkill,	" 1831	23
Schuylkill Valley,	" 1830	10
Mill Creek,	" "	5
Mount Carbon,	" 1831	7
West Branch,	" "	18
Carbondale,	" 1829	16
Pine Grove,	" 1830	4
Lykens Valley,	" "	17
Total in Pennsylvania,		271
Chesterfield R.R.,	1831	13
Petersburg and Roanoake,	1833	60
Charleston and Hamburg,	"	136
Boston and Lowell,	1835	26
Quincy,	1829	4
Boston and Worcester,	1835	45
Boston and Providence,	"	42
Ponchartrain,	1831	4
Lexington and Ohio,	1835	33
Paterson and Hudson,	1834	14
Camden and Amboy,	1835	61
Camden and Woodbury,	1833	7
New Castle and Frenchtown,	1832	16
Baltimore and Ohio,	1834	85
Washington Branch,	1835	30
Westminster Branch,	1832	10
Albany and Schenectady,	1834	16
Total,		873

In the course of the year 1836, there were 232 miles more of roads opened in the United States; but as you wished to know the distance in operation in May of that year, I do not include them in the foregoing schedule.

I am, very truly,

H. V. Poor.

Am. R.R. Journal Office, New York, June 7th, 1854.

Anti-Chlorine.

Messrs. Editors—I perceive by your issue of the 13th ult., page 277, under the head "Roch's Anti-chlorine," that you labor under a misconception. As its name imports, anti-chlorine (sulphide of sodium) is not used as a substitute for chlorine, but to decompose it; for which purpose it is used instead of sulphuric acid, to what advantage I decline expressing an opinion. Its action, I believe, is according to the following formula:—Cl. Ca. + So^2 Na.=So^2Ca. and Cl. Na. Chloride of lime to sulphide of sodium, produce sulphide of lime and chloride of sodium.

I am sorry to observe that you contribute to the somewhat popular prejudice of the injuriousness of chlorine to textile fabrics. It is groundless, as in the hands of skillful workmen they suffer *less* than when bleached in the sun. I have been unable to appreciate the injury done by the proper use of chlorine. E. M.

Providence, R. I., June 3rd, 1854.

[We assure our correspondent that our object, as it always is, was a good one, in directing attention to faulty bleached muslins. We practically know, that with care, muslins can be chlorine bleached with as little injury to the fabrics as grass bleached, but it is also true that a great deal of the common bleached muslins have been injured—carelessly we have no doubt. The popular prejudice to which our correspondent refers, is not baseless; if it were, we would contribute to combat it. We hope our bleachers will act wisely in the matter, and exercise more care with their *sours* and washings in conducting their processes.

Influence of Machinery on Civilization.

The annexed eloquent extract is from the "Philadelphia Daily Ledger,"—a paper always able and uniformly correct:—

"The influence of these reforms on civilization cannot be estimated too highly. The old prejudice against machinery, which never had any hold on men of real intelligence, is now disappearing even from the minds of the most ignorant. Everywhere the great truth is being acknowledged, that the influence of machinery is to elevate the condition of the human race, by substituting skilled labor and directing talent for mere executive work. In other words, men are elevated, so far forth, from machines to makers and controllers of machines. The higher qualities of their nature are being called into exercise. Instead of going the same unvaried round of labor for generation after generation, like a blind horse forever traveling the narrow circuit of a mill, they are throwing the burden of all mere mechanical work on machinery, subjecting the dull and inanimate forces of nature to their will, and making iron and steel submissive agents. If the reforms, already made in this direction, afford any criterion for the future, the time will come eventually, when nearly all that is irksome in labor will be avoided, and then that part of the curse pronounced on Adam at least be alleviated.

Yet this aspect of the influence of machinery and civilization, though the most important, is precisely the one least regarded. It is far more common to hear the cheapening effects of machinery extolled than to have these enfranchising and elevating influences pointed out. We do not deny that the placing of cotton goods within the reach of the poorest, has materially improved the physical condition of the human race, and therefore indirectly refined and enlightened mankind. But this is only the ultimate, not the proximate result. Nor is it without alloy. And to a certain extent the effect of machinery in this direction is enervating and sensualizing. It advances civilization in its physical aspect, but not in its moral, intellectual, and religious ones. It fosters less the spiritual and mental part of humanity than that baser part which is 'of the earth, earthy.' But machinery, regarded as a means to banish man's slavery to toil, by substituting brain-work for the labor of the hand, is the high road to that fuller and more perfect development of society, which poets have painted, philosophers predicted, and revelation, it is believed by many, expressly promised."

Lasting Effects of Heat.

The French, during the time their army remained under Bonaparte in the Holy Land, constructed two very large ovens in the castle of Tiberias. Two years had elapsed at the time of our arrival since they had set fire to their granary; and it was considered a miracle by the inhabitants of Tiberias, that the combustion was not yet extinguished. We visited the place, and perceived that whenever the ashes of the burned corn were stirred by thrusting a stick among them, sparks were even then glowing throughout the heap, and a piece of wood being left there became charred. The heat in those vaulted chambers where the corn had been destroyed was still very great.—[Clarke's Travels.

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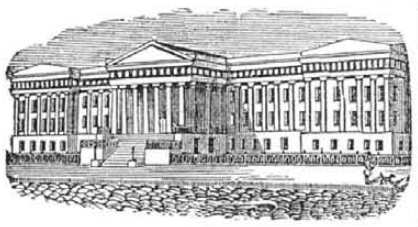

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 6, 1854.

KNITTING MACHINES—B. S. Wood. of Burrillville, R. I.: I claim. first, the employment of a series of wide and narrow tongued jacks, arranged in any desired order of succession, to form short loops upon the frame needles, and lay long loops between certain of the said needles, so that they may be entered and caught by a set of rib needles working parallel or nearly so, with the frame needles, as described.

Second, the method of giving a lead or advanced motion to the narrow jacks, by means of the double slur, having one part wider than the other, and the recess, made in the heads of the wide jacks, to prevent their being operated upon until the wide part of the slur comes in contact with them, and allow only the narrow jacks to be operated upon by the narrow part, as set forth.

Third, I claim the movements of the two sets of needles relatively to each other, as described, that is to say, the front needles, rising first, and then remaining stationary to receive the loops upon and between them, the rib needles being in the meantime stationary, but rising after the loops are formed, and entering the loops intended for them, and then both sets of needles descending together to carry the loops through those previously formed.

Fourth, arranging the rib needles at such a distance from the front needles that their upward motion will not carry them through the loops and springing their ends forward to the requisite position for this purpose by means of a presser, constructed, arranged, and operated as set forth.

Fifth, attaching the head which carries the jacks, the slur, and the thread carrier, to a frame which is capable of swinging back, as described, to expose the needles and afford greater facility for their adjustment, for the running on of the quarter, and for the repair of any damage to the machine or to the web.

[This is an excellent invention. A description of it may be found in No. 27, present Vol. Sci. Am.]

BALANCING SLIDE VALVES OF ENGINES—Robt. Waddle, of England. Patented in England, April 27, 1853. I claim first, the equilibrium table with its ledges or their equivalents, applied to and acting in combination with the valve, as described.

Second, I claim the packing pieces extending from the back of the valve chests and abutting against the back of the valve, in combination with the small passages leading to the ports, as described.

Third, I claim combining the equilibrium. table or its equivalent, with the packing and small passages by the joint action of which a slide valve is perfectly and entirely balanced.

MACHINES FOR WASHING BOTTLES—A. H. Rauch, of Bethlehem, Pa.: I do not claim a folding brush for washing bottles independent of its peculiar construction.

But I claim a rectangular shaped folding brush which has three of its sides made of solid strips and set with bristles, which serve to clease the shoulder, periphery, and bottom of the bottle at the same operation, while its other side is made hollow and serves as a canal for introducing a constant stream of clean water to the interior of the bottle. to facilitate the cleansing operation, and the whole united together by loose joints, in such a manner that when the brush is folded, the cross-piece which carries the brush for cleansing the bottom of the bottle, will assume a position in line and parallel with the hollow stem while the pieces carrying the side and shoulder brushes assume a vertical position in line with each other, and lie parallel alongside the stem and bottom brush, as set forth.

I do not claim washing bottles in an inverted position, but I claim the employment of the revolving cone, or its equivalent, which is so arranged and operated that it takes hold on the inverted bottle, having its mouth resting in a socket, and causes it to revolve rapidly when the machine is in operation, and brings its inner and outer surface in contact with the inside and outside cleansing brushes, as described.

Third, I claim the employment of the stationary inside and outside cleansing brushes, in combination with the revolving cone and inside and outside branch pipes of the elevated reservoir, the whole being for the purpose described.

Fourth, I also claim the self-adjusting arrangement for accomplishing the three following objects: 1st. Folding the expanding frame, and retaining it thus ready for entering the mouth of the bottle. 2nd. For elevating the revolving cone so that it may be out of the way when the bottle is being placed over the brush; and, 3rd. For shutting off the supply of water while putting another bottle to be washed over the expanding brush.

Fifth, I claim arranging a spring between the supply stem and the side strip of the brush frame, for the purpose of expanding the brush as it enters the body of the bottle, as set forth.

[This novel invention is illustrated on page 281, Vol. 8, Sci. Am.]

INSTRUMENTS FOR TAKING DEEP SEA SOUNDINGS—C. F. Brown, of Warren, R. I.: I claim an implement constructed and operated as described, for sounding the depth of the ocean.

[This application for a patent was made in the month of June, 1853, and the correspondence which has passed between the Patent Office and the Attorneys of the inventor, during the past year, would fill a medium-sized pamphlet, and we believe would interest and amuse the Inventors of our country more than any publication which has been issued for a long time. In a word, "much ado about nothing" has been made over this case, while substantially the same claim is granted that was at first submitted for examination.]

BRICK POTTERY KILNS—Joseph Baron de Palm, now in New York City. Patented in England, July 13, 1852; in France, Aug. 13, 1852; in Holland and Belgium, Sept. 15, 1852: I do not claim secondary or vapor chambers over the main chambers, forming an upper tier with numerous apertures through which heat passes from below.

But I claim a series of upper and lower chambers in kilns for baking or burning bricks and pottery, communicating with each other by apertures in the partition walls and floors, in combination with adjustable dampers or registers in the apertures in the floors between the upper and lower chambers, as described, for regulating and controlling the heat in its ascent, and directing it to those parts of the upper chambers, where it may be most required, as specified.

COMBINATION OF RAILROAD TRACKS AND WHEELS—H. R. Campbell, of Lebanon, N. H.: I do not claim the compound rail (or a rail composed of two or more bars in its cross section) so joined and fitted together as to form one continuous rail on each side of the track to be used, with wheels of a single tread and a flange on one edge.

Nor do I claim a rail with a groove in it, or two rails so arranged as to form a groove between them, to be used merely as a guide to the flange of common wheels.

Nor do I claim a wheel with a flange in its center of tread which is intended to run and bind in a groove or double rail, or a grooved wheel intended to bind upon a single rail, to create an unusual grip or friction over that due to weight on rails of inclined planes.

The essential and distinguishing character of my improvement is the double rail in combination and use, with wheels having a tread or bearing on each side of the flange, as described.

I claim the combination of the wheel with the flange in the middle of the tread (which shall be symmetrical on both sides of the flange, as to diameter and tread) with the double line of rails, so constructed that the flange of the wheel shall run freely between said double line of rails, and with sufficient play or space between said double line of rails to avoid unnecessary friction against said flange, and to accommodate the ordinary inequalities in the width and parallelism of the railroad track; the surfaces of said double line of rails to be level or nearly so, and the two portions of the tread of the wheel to bear the whole weight of the wheel equally or nearly so, on the surfaces of said double rails.

The track and wheels to be arranged for use in combination and for application to railroad purposes, as shown.

IMPRESSING THE THREAD UPON SCREW BLANKS—Samuel McCormick, of Dublin, Ireland. Patented in England March 22, 1853: I claim forming or impressing screw thread or ornaments on the plain surface of screw blanks or other plain shafts of metal, by means of three revolving dies placed triangularly on a suitable frame and worked by mechanism described.

BERTH KNEE FORMER—Donald Taylor, of East Boston, Mass.: I claim the combination and arrangement of the side rollers or bars, A B, the slotted bars, C D, and the bar, I, with the springs, friction rollers, G H, and set screws, or their equivalents, whereby a person is enabled to adapt the instrument, or berth knee former, between any two timbers, and to the width for the berth knees, as set forth.

MACHINE FOR DRESSING POLYGONAL TIMBER—Henry Allen, of Norwich Conn.: I do not claim the employment of a pattern rail to guide a rotary cutting tool or wheel over a piece of work, such have been used in turning irregular forms.

Nor do I claim the invention of a tracer permanently fixed to the frame.

But I claim the means whereby the said cutting tool may be adapted to the reduction of a stick of any ordinary diameter and to a size suitable to the stick, as described, such improvement consisting in combining with the tool frame, the sliding rest operated by the lever, and held in position by it and the perforated size plate, as specified.

BENT TIMBER FOR SHIP FRAMES—Wm. Ballard, of New York City: I claim cutting the heart out of artificially bent ship timbers at the curve or bend known as the "naval timber," and combining therewith an iron plate (curved so as to fit the curve of the timber) by inserting it in the place cut out of the timber, so as to be protected from rusting by the action of the atmosphere or bilge water of the ship, as described.

CULTIVATORS—Whitman Price, of Goldsborough, N. C. I claim the construction of the accommodating frames having uprights and cross ties or suspension bars, together with the compensating strap, or equivalent.

I also claim the construction of the twisted obliquely curved blades or thinners attached to the radial arms forming a rotary cotton thinner, and using the same with the right and left double shank furrow shears, as set forth, and arranged with the cultivator.

MAKING SEAMLESS METAL TUBES—Jared Pratt, of Taunton, Mass.: I claim extending and finishing seamless metal tubes, by moving the mandrel and tube in a horizontal direction, while the rollers or their equivalent dies surrounding the tube are rotated, or moving the dies in a horizontal direction, and rotating the mandrel and tube, as set forth.

DAMPERS IN ROTARY STOVES—Wm. W. Hill, of Greenport, N. Y.: I claim the combination and arrangement of the dampers with a revolving or rolling oven, as set forth.

GRAIN MILLS—Walter Westrup, of Wapping, Eng. Patented in England, Jan. 24, 1850: I claim the general arrangement and combination of parts described, that is, the use of two or more pairs of mill stones, the runner of each pair being mounted on the same vertical shaft, and arranged in such a manner that when the meal escapes from the first pair of stones, it may be subjected to a dressing operation for the purpose of separating the already formed flour from the unground meal, as set forth, leaving the unground meal when freed from the flour to pass through the second pair of stones to perfect the grinding operation.

RIVET CLAMP FOR WIRE FENCES—M. P. Coons, of Brooklyn, N. Y.; I claim the peculiarly constructed rivet clamp and its application to wire fences, or equivalent purposes, as described.

MOTH KILLER—W. A. Flanders. of Sharon, Vt.: I do not claim to have invented a blow pipe in which the flame of a lamp is urged by a stream of alcoholic vapor generated by the heat of the lamp itself

But I claim the moth killer, constructed and operating as set forth, the lamp being entirely protected from the wind, and from being extinguished by the dead millers, and the flame blown through an opening in the side of the lantern.

MACHINE FOR CLEANING AND WATERING STREETS—Ross Deegan, of New York City: I do not claim the rotary brush or the apron, as such have been used before in machines of this character; neither do I claim of itself the revolving fan or blower.

But I claim the method of removing dust from streets by a rotary sweeper beneath the machine, combined with a fan revolving at high speed, in an external chamber, which is connected by passages with the chambers which first receive the dust, and the chamber of deposit, as specified, by which arrangement the dust is driven within the action of the fan by the sweeper, and by suction drawn to the fan chamber, whence it is driven to the chamber, D. and there deposited, the air in passing out under strong pressure through the finer reticulations in the cover of said chamber.

FLOURING MILLS—Edwin Clark, and James M. Clark, of Lancaster, Pa.: We claim, first, the double conveyer for the fine flour and middlings, constructed as described, to wit, the conveyer for the middlings being attached to a tube enclosing the conveyer for the fine which terminates in the receptacles, R, and that for the middlings in another receptacle: and in combination with this double conveyer, we claim the arrangement of the receptacles, elevators, and spouts, for returning the fine flour and middlings, respectively to the bolt, and the eye of the mill, as set forth.

Lastly, we claim the arrangement in series of spouts with their slide valves in combination with the separate receptacles and conveyers.

TURNING HUBS—Smith Beers, of Naugatuck, Conn.: I claim the arrangement and the manner of operating a series of revolving cutters, for the purpose and in the manner set forth.

[See notice of this improvement in No. 15, Vol. 9, Sci. Am.]

DEVICE FOR OPERATING CUTTER HEADS OF PLANING MACHINES—T. F. Tait. of Worcester, Mass.: I claim hanging the planing cutters to the vibrating arm, or its equivalent, as set forth.

VAULT COVERS—Alfred Brady. of New York City: I claim the cylindrical lens having its upper face formed as set forth. in combination with the india rubber or other elastic water-proof packing and vault cover, whether made of wood or metal, as described.

HYDRANT CAP—N. W. Speers. of Cincinnati, O.: I claim the formation of the cap or cover of a stop cock box with catch of a width exceeding the play of the cap with in the rebate, and with pivots whose distance from their confining flanges exceeds the depth of the rebate, or equivalent devices, for the objects described.

MECHANISM FOR OPERATING PUMPS—James A. Whipple, of Boston, Mass.: I claim the combination of the wheel, the cogged segments, and the racks upon the end of the pistons, by which I attain an accelerated motion of the pistons at the same time that the power which actuates them is applied in a vertical line passing through their center.

ROAD SCRAPERS—S. H. Dudley, of Milton: Conn.: I do not claim the invention of scrapers, chains, and hooks; but I claim the combination of the bow or bows, with the scraper, for the purpose set forth.

MACHINES TO PRINT NAMES, &C., ON NEWSPAPERS—E. P. Day, of New York City: I claim the type cylinder having a series of type grooves cut in its periphery and parallel to its axis, and binding screws in the cap or end plate of the cylinder for adjusting the type in the cylinder grooves, in combination with the table platen and ratchet wheel, for holding the paper and printing and rotating the cylinder. as an improvement on Henry Moser's invention for like purposes, and whereby all the names of a subscription list for one post office. and the address of the post office, may be printed at one operation.

WHIFFLE TREES—F. M. English, of Hopkinsville, Ky.: I claim the described arrangement of springs on the ends of swingle-trees for holding the traces on the darts and throwing off the same at the will of the driver, as set forth.

LUBRICATOR—R. M. Wade. of Wadesville, Va.: I claim the hollow cylinder, in combination with the jacket. as set forth, namely the two apertures in the cylinder being so situated, that while the upper one is admitting oil into the cylinder, the lower one is closed to the steam—and when the lower aperture is open to the steam the upper one is closed to the steam and to oil in the cup.

STEAM GENERATORS—A. B. Latta. of Cincinnati, Ohio: I claim the dividing of the coil or coils commencing with one, then dividing into two, and then subdividing into four or any other number, as described.

SOFA BEDSTEADS—C. F. Martine, of Boston, Mass.: I claim the windlass barrel and its working gears or their mechanical equivalents, and the cords of said windlass barrel in combination with the seat, the back, and a single spring mattrass, as applied thereto, the whole, being applied together and made to operate as specified.

EYELET MACHINE—H. L. Lipman, of Philadelphia, Pa: I lay no claim to the devices described, separate and uncombined; but I claim the arrangement in one stock of the double-acting lever, punch, and fastener, with their spiral springs, and counter dies, or anvil block, for the purpose of punching holes for and setting eyelets in one machine, as set forth. and this I claim when said lever actuates both punch and fastener, by allowing one to rise while the other is being forced down, as shown.

EXCAVATOR—Elijah Phelps, of Hendersonville, Ill.: I do not claim scoops. supported by side wheels; but I claim the combination of the wheeled scoop with the castor wheels, operating as and for the purposes set forth.

SEED PLANTERS—Wm. B. Johnson, of Staunton. Va.: I do not claim said groove semi-cones, or their equivalents, separately and apart from the other devices, used in combination therewith by me, as their equivalents have been used by F. Vandoven, and are described in the specification of his seed planter, patented April 13, 1852.

I claim the method described of sowing seed broadcast, by means of the ascending and descending buckets, grooved semi-cones, or their equivalents, and reciprocating bed or table, constructed, arranged, and operating together, as specified.

I also claim constructing the seed buckets with an open back and false or close adjustable inner back, for regulating the lifting capacity of the buckets, as set forth.

WATER LEVEL INDICATOR FOR STEAM BOILERS—Patrick Clark, of Rahway, N. J.: I claim the arrangement of the tube in relation to the chamber in connection with the boiler, whereby through the action of the steam and water in the chamber upon the steam in the tube, the water in the tube is made an indicator of the hight of the water in the boiler, or made to operate a valve in the feed water pipe, as described.

FEATHERING PADDLE WHEELS—Thos. Champion and S. Champion, of Washington, D. C.: We claim, first, the bowing or arching of one or more of the shanks of the paddles. so that they may pass through the hub and stand in the same transverse line with each other round the wheel, with the paddles on each end of each shank permanently at right angles to each other.

Second, we claim giving to the shifting guides a side motion just sufficient to disengage them from the projections of the paddles from one side of the hub. and simultaneously engage them with projections on the other side of the hub, and vice versa, so as to effect the proper adjustment or shifting of the paddles, and whereby we dispense with the inconvenience of having to turn the frame around to the opposite side of the wheel to shift the guides.

SEED PLANTERS—Whitman Davis, near Morgantown, Va.: I claim operating the seeding bar of seeding machines by means of a bell crank and lever, when said lever receives its motion from the leg of the operator in the act of walking, as set forth.

APPARATUS FOR FILING SAWS—John Sheffield, of Pultneyville, N. Y.: I claim the arrangement of the stirrups, cords, weight, and rollers, for holding, guiding, and supporting a file whilst filing a saw in the gate or frame, as set forth.

GOLD AMALGAMATORS—Robt. H. Collyer, of New York City: I claim effecting the amalgamation of the gold, or other metal, and the separation of the ores, or other foreign matter, by means of a cylinder or cylinders, fluted to form buckets, or otherwise provided with such buckets, and revolving within a concave trough, or concave troughs, which contain the necessary quantity of mercury, said cylinders operating as described.

[This invention is noticed in No. 32, this Vol. Sci. Am. and is a counterpart of the Amalgamator illustrated in No. 15, where this part of the invention is shown combined with Dr. Collyer's original patent.]

LATH MACHINE—Isaac R. Shank, of Buffalo, Va.: I claim the revolving gauge formed of two unequal cylindrical segments in connection, as described, with a reciprocating knife. for the purpose of gauging and insuring the liberation and discharge of the lath.

OPERATING SAW MILL BLOCKS—David Russell, of Drewersburgh, Ind.: I claim the combination of the transverse racks, the wheels, and the shafts, with the horizontal connecting piece and its racks, as set forth.

LATHE—H. O. Clark, of Worcester, Mass.; I do not claim the sliding rest or the V-shaped knife, or the side cutters simply, or the bushings, except when used in combination, as described.

I claim the knife in combination with the slide operating in a straight line to and from the center, or nearly so.

Second, I also claim the movable bushings applied to all the different sized cylinders required.

WEAVING CUT-PILE FABRICS—Thos. Crossley, of Boston, Mass.: I claim the described method of weaving a cut pile fabric, that is, interweaving the pile into the body of the cloth, by looping it over a shot of filling on the top of the foundation warp, and under a shot of filling under the foundation warp, as described.

CLEANING BOLTS OF FLOURING MILLS—Wm. Cann, of Black Rock, N. Y.: I claim the application to flouring bolts of a brush or cleaner as described, which will prevent the bolts of flouring mills from becoming clogged up with and obstructed by "beards," and other substances which are contained in almost all wheat, and which will keep the bolts clean and free without the necessity of "shaving" and "brushing" the bolts, using for that purpose the aforesaid cotton, woolen, or other cloth or flexible material which will produce the desired effect.

GRINDING MILLS—Edward Harrison. of New Haven. Conn.: I am aware that a disk faced running mill stone has been supplied with a metallic back and eye. when the said runner has been suspended upon a bail and the grain fed through the eye of the same. And I am also aware that a small sized running mill stone without a metallic back and eye. has been rigidly secured to its spindles: I do not claim either of the said arrangements.

But I claim the grinding mill produced by forming the runner of a metallic back and hub combined with a disk grinding face, composed of the requisite quantity and quality of stone, and rigidly securing the shaft within the metallic hub of the runner, when the said runner is arranged and operated with the stationary uppermost stone, as set forth.

SECURING CAR WHEELS UPON AXLES—Jordan L. Mott, of New York City: I claim the method described of securing railroad car wheels to their axles by means of a nut, or its equivalent, within the wheel, as set forth.

JOINT BODIED BUGGIES—E. J. Green, of Cedarville, N. Y.: I do not claim a joint bodied buggy with a spring under the seat, as that has been described in the patent of James C. Spencer, of the 27th May, 1851. Nor do I claim the invention of a spring reach, which shall allow the separation of the front and rear axles to a certain extent. and then act as a tie to prevent their further separation, as the patent of C. H. Guard. of June 10 1851, embraces a spring reach which performs this office.

Nor do I claim a spring reach with one point of connection on the center of the front axle, and two points of connection equi distant from the center on the rear axle, as this is embraced in the patent of Starr Fairchild, of the 18th January, 1848.

But I claim the combination of a spring reach of the peculiar form and construction, as described, with a joint-bodied buggy of the form and style of that patented by J. C. Spencer, by means of which greater strength is given to the buggy and an easy and elastic seat given to the driver with less expense and greater simplicity than has been hitherto used for like purposes.

HAY PRESSES—Levi Dederick, of Albany, N, Y.: I claim traversing the follower parallel by two set of levers or toggle joints with one lever of each set extending beyond the joint of connection, so as to form a lever to operate the joints; when they are so arranged that the lever of the lower set or joint may work or vibrate between the fulcrum levers of the upper one: the two levers being connected together by a rod or links. the whole being constructed and operated, as described.

MOLDING HOLLOW WARE—J. J. Johnston, of Alleghany, and J. V. Cunningham, of Pittsburg, Pa.: We claim the arrangement of the follow board, core box, and anchor, operated as set forth.

GRINDING MILLS—J. C. Reed (assignor to C. P. Buckingham & H P. Upton.), of Mount Vernon, O.: I claim, first, the hollow spindle in combination with the metallic cup, through which the grain to be ground is fed, as specified.

Second, the method of balancing and adjusting the bed stone by means of adjustable weights, arranged in radial guides and movable towards and from the center of the stone, as described.

DRYING FLOUR—Hervey Ely (assignor to S. P. Ely,) of Rochester, N. Y.: I claim closing the cylinders or other conveyers at each end; or causing them to revolve in close boxes, as described, for the purpose set forth.

Second, applying to the exterior surface of closed cylinders, continued currents of heated air, so regulated as to keep the contents of the cylinders at a given temperature, by an arrangement of dampers, and the observation of the thermometer attached, as set forth.

BLOWING FAN—Thos. Wallace. and Elizabeth Bacmeister (admx. of Henry Bacmeister, dec.), of Philadelphia, Pa.: We do not claim any improvement in the outside casing of a fan, nor in the means and apparatus by which rotary motion is produced.

But we claim the cylindrical revolving diaphragm, with one or more openings for the escape of the air by the combined action of the centrifugal force and a vacuum, as set forth.

COOKING RANGE—Dennis Donovan (for himself and as administrator M. G, Hallman, dec,. assignor to Henry J. White,) of Philadelphia, Pa.: We claim the hinged flue cover, consisting of the hinged cover, side pieces, flue spaces, and top flue, in combination with the valves or dampers.

Also, in combination with the hinged cover and the valves, the arrangement of the aperture for the escape of fumes from cooking.

Lastly, we claim the sliding boiler plates in combination with the hinged cover and valves or dampers.

CAR AND OTHER WHEEL TIRES—Alfred Krupp, of Essen, Prussia: I am aware that tires have been made without welding from a disk expanded from a center opening.

I claim making the tires for railway car and other wheels out of solid bars of cast-steel, without welding, slotted, opened, expanded, and finished into the desired shape, as described.

[The Examiners have worked well the past week, and if they will contiue as industrious through all the summer months, they will have cleared off the old cases to such an extent, by next fall, as to merit—and they will receive them too—the commendations of the whole army of inventors in the United States.

It cannot be that our proposition to take a branch of the Patent Office in New York to manage (vide No. 38 Sci. Am.) has prompted this accelerated action on the part of the Office. Has it? If it has our object is accomplished: and now if they will continue as active, we will PERMIT the Office to remain consolidated without further advocating the opening a branch in this city.

Balloon Ascension.

John Wise, the veteran aeronaut, made his 163rd ascent from the Crystal Palace yard, in this city, on Friday, the 9th inst., at 3 P. M. The day was squally, making the voyage of the bold balloonist dangerous, but with his usual intrepidity and skill he made it successfully, although he lost his balloon. He descended below Flushing, L. I, and jumped down 40 feet to save his life.

Singular Cause of Death.

Miss Elizabeth A. Sawyer died at Valatie, N. Y., last week, from the effects of poison, communicated to her system by some yarn, which she placed in her mouth, and which came in contact with a sore.—[Ex.

[Some colors are dyed with arsenic. Thus the beautiful light sea green on cotton is died with arsenic, sulphate of copper, and caustic alkali. The yarn of this color is poisonous.

Assam Tea.

Some years since an English company undertook the culture of tea in the country of Assam, situated between Bengal and China, on the waters of the Burrampooter. The London papers state that this company has now under cultivation 2,115 "poorahs" of land. Their last crop of tea amounted to 366,587 pounds, or an increase of about 95,000 pounds over that of the previous year.

Willow Dock.

They are building a willow dock at La Crosse, Michigan. It is constructed entirely of willow twigs, about twelve feet long, bound in bundles one foot thick, which are so ingeniously arranged and woven together that it is impossible for the sand to work out or the water to work in. Each bundle contains about one hundred small trees, and it will take fifty thousand of these bundles to complete the work.

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New Inventions.

Improved Lifting Jacks.

Three applications for patents for improvements on lifting-jacks have recently been made by Robert W. Genung, of Blooming Grove, John Jenkins, of Monroe, and Dubois & Smith, of Craigsville, all in New York State. The improvement of the first relates to making the lever capable of being adjusted so as to be thrown in and out of contact with the rack-bar, and retaining it securely in its place after being adjusted, by providing the bearings with a curved slot, and two semicircular fulcrum rests, for the purpose of allowing the rack-bar to descend freely after it has been raised to the proper hight.

That of the second consists in providing the standard with adjusting notches on its front side and ratchet teeth on its back side, in combination with the adjustable lever having a fulcrum and pawl attached to it, so as to be set for elevating carriages to different hights.

The other relates to a mode of making the fulcrum of the lever adjustable, to suit carriages of different hights, and also making the seat of the lever self-adjusting when the weight of the carriage comes upon it.

Sawing Machines.

John J. Squire, of St. Louis, Mo., has invented some new improvements for re-sawing stuff which has previously been sawn out of the log, and making it into pickets, &c. A radius-guide is applied to the saw for guiding it as it enters the stuff, ensuring its true movement, and preventing its vibration. The saw is hung in a sliding frame in such a manner that it (the saw) can be adjusted as it wears by use; and it also permits of saws of different sizes being used. Feed rollers are placed within the sliding frame for gauging the stuff to be sawed, presenting it to the saw and guiding it while being sawed. Measures have been taken to secure a patent.

Reservoirs for Compressed Air.

An improvement in reservoirs for compressed air, has been invented by Gerard Sickles, of Brooklyn, N. Y., who has taken measures to secure a patent for the same. The ultimate object of this invention is to store up in reservoirs and keep constantly on hand—to be used as a motive power—air compressed by pumps operated by wind mills, and thus to employ indirectly wind force as a motive agent, and made constantly available. The air is compressed in small quantities in small reservoirs, a series of which are connected together, and from which the power is taken as required for the purpose named.

Slide Valves of Steam Engines.

Martin V. B. Darling, of Providence, R. I., has taken measures to secure a patent for an improvement in the slide-valve motion of steam engines, to make the valve cut off the steam at various points of the stroke as may be desired. A cam and an eccentric are applied to work the valve in such a manner that the former moves the valve to open the steam ports while the latter closes them. By this means the ports are opened and closed with sufficient rapidity to enable the steam to be admitted full on the piston and cut-off at any point between about one fourth, or even less, of the stroke and the end of the stroke.

Baggage Cars.

Measures have been taken to secure a patent, by H. S. Clark, of La Porte, Ind., for an improvement in baggage cars for railroads. The invention consists in a peculiar arrangement of the doors, whereby sparks, rain, or snow are prevented from entering any car to which it is attached.

Deck Iron for Ships.

An improvement has been made in deck-irons for ships, by D. T. Corwin, of Port Jefferson, N. Y., who has taken measures to secure a patent. The object of this invention is to provide a good safety chamber for the passage of the chimney or smoke-pipe from the cabin through the deck.

Scythe Snath Fastenings.

John Boley, of Baldwinsville, N. Y., has applied for a patent for an improvement in scythe snath fastenings, the nature of which consists in securing the scythe to the snath by having a plate or collar on the latter, with projections on it fitting into the inner side of the scythe near its end, the scythe being kept firmly against these projections, by a screw bolt passing through the scythe. The nibs or handles of the snath are secured in a peculiar manner by collars and nuts.

Improved Auger.

Isaac W. Hoagland, of Jersey City, N.J., has taken measures to secure a patent for an improvement in augers, the nature of which consists in having the cutting portion of the auger made detached from the screw portion, and attaching the cutting part to the screw part by means of dovetails and screws. This is a most excellent improvement, for the screw part, by this plan, can be made to answer twenty cutting parts, as they successively wear out.

IMPROVEMENT IN HORSE POWERS.---Fig. 1.

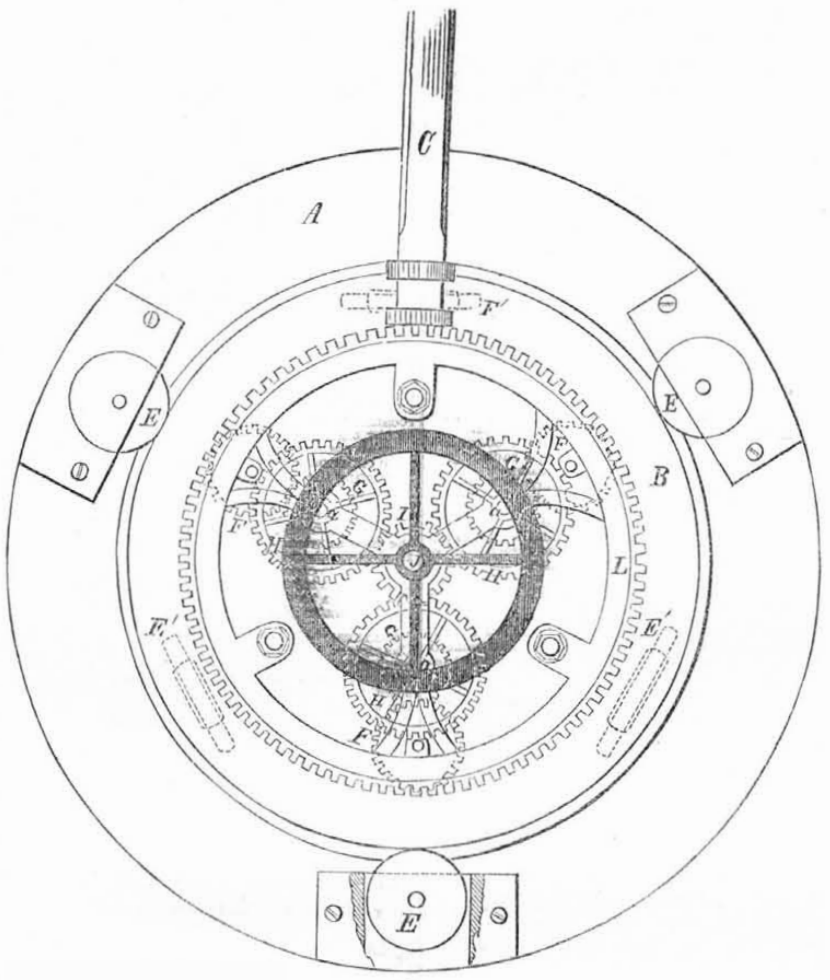
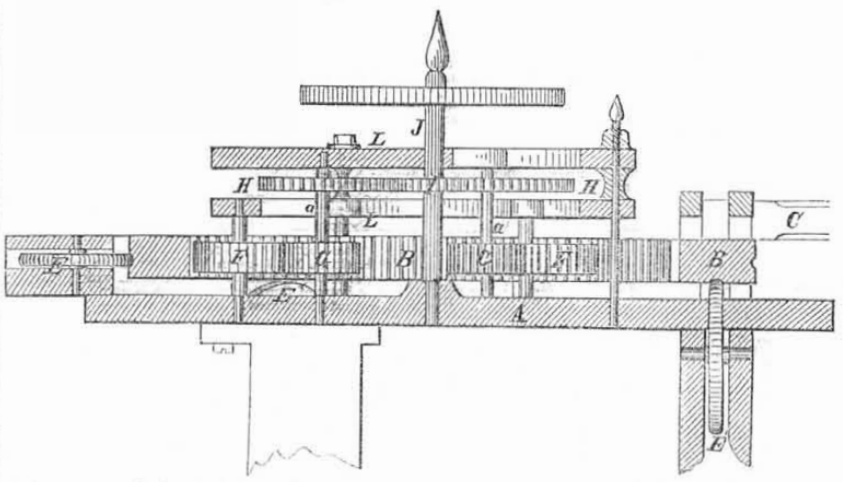


Fig. 1 is a top view and fig. 2 a vertical section of a new Horse Power Machine, by Wm. McCord, of the village of Sing Sing, N. Y., who has taken measures to secure a patent. The nature of the invention consists in transmitting the power to the central shaft by means of an internal annular driving wheel made without arms, arranged between and upon friction rollers and small gear wheels, in such a manner that the use of a base support shaft—employed on other horse powers—is dispensed with, and a great amount of friction saved.

A is the frame which supports the working mechanism; B is the driving wheel provided with teeth on the inside rim. C is the lever or pole to which the horse is attached; it is connected to the rim of B. E E E are horizontal friction guide rollers, and E′ E′ E′, are vertical friction rollers. Motion is transmitted to the central shaft, J, from which power is taken to work other machines or machinery,—through the train of gearing, F G, H I—the spindles of which gear wheels run in bearings in the frame, A, and are supported in the annular frame, L L. The velocity of the central shaft is increased by the speed given to the shaft, *a*, of the small gear, G, and from it communicated by the larger gear, H, to the small pinion, I, on the main shaft, J. The whole gearing is arranged for the purpose of maintaining a uniform pressure on all parts towards the center, and to support with ease all the various parts so as to equalize and reduce the friction to the least quantity.

Figure 2.



Mr. McCord has also applied his method of constructing Horse Powers to operating wind-lasses,—of course thus forming a different machine, so far as it relates to peculiarity of arrangement,—for this he has also taken measures to secure a patent. The supporting and guiding of the annular wheel, B, by the horizontal and vertical anti-friction rollers, are admirable features in this machine. The construction and arrangement of all the parts, as shown in the figures, with the description of them, will enable any person to understand the same.

More information may be obtained by letter addressed to the patentee at his place of residence above named.

Machine for Cutting Shoe Welts.

S. J. & C. H. Trofatter, of Salem, Mass., have invented an improved arrangement of machinery for cutting leather to be used for the welts of boots and shoes. The object effected is the cutting of two welts from the same thickness of leather, at one operation, both being alike in every respect. When welts are cut by hand, only one is obtained—speaking in a general manner—from one thickness of leather. This machine cuts out the welts with great rapidity, is neat, and not expensive. Measures have been taken to secure a patent.

New Churn.

Ransom Markham, of Caledonia, N. Y., has made an improvement on churns which consists in making the bottom of the dasher with a series of angular recesses for forcing the cream towards the sides of the churn, causing it to rise and roll upon the top of the dasher as it (the dasher) is lowered. The dasher has also two valves which open as it is raised, and allow the cream which was forced through the angular recesses upon the top of the dasher, to escape and pass under the bottom of the dasher ready for the return stroke. Measures have been taken to secure a patent.

Quartz Crushers and Amalgamators.

Heman Gardiner, of New York City, has applied for an improvement on machines for crushing quartz, and amalgamating the gold. In this machinery, a preparatory grinding operation is performed by balls in a basin, and the quartz is afterwards pulverized finely between horizontal mill stones, and the gold is amalgamated with the mercury in a trough surrounding the stones. The improvements relate to a method of giving motion to the basin, by which much of the frame-work is obviated. In addition to the rolling ball in the basin, another is employed, which is suspended from above the basin and made to revolve round the axis thereof.

Planing Wood Moldings.

An improvement has been made in planing moldings, which consists in the combination of feed rollers and stationary cutters, by which the moldings are planed much faster than by hand—the method of finishing them at present. The rotary molding machines now in general use, do not finish the moldings smoothly; indeed, the sides are not smoothed at all, consequently neat joints cannot be made of such stuff—but require the hand-plane: this machine is designed to finish the work accurately.

Mortising Machine.

Hiram & S. H. Plumb, of Honesdale, Pa., have invented an improvement on mortising machines which consists in the employment of two chisels for cutting the ends of the mortise, and a reciprocating planer working horizontally for cutting out the wood between the two end chisels, as the latter are forced gradually into the wood. Measures have been taken to secure a patent.

Guard Rails.

George P. Sanborn, of Bridgeport, and Willis Mansfield, of New Haven, Conn., have taken measures to secure a patent for an invention which consists of securing the main and guard rails, in such a manner as to prevent the guard rail from being displaced by the cramping of the car wheel flanges.

Hill-Side Plows.

H. F. Baker, of Centerville, Ind., has applied for a patent for an improvement on hill-side plows, which relates to a new method of adjusting the mold-board and *share*, so as to turn over furrows of different widths.

Improved Sausage Stuffer.

John J. Weeks, of Buckram, N. Y., has applied for a patent for an improvement on apparatus for stuffing sausages. It provides for the escape of air from the meat, so as to prevent the bursting of the sausage when filling

To take Ink out of Mahogany,

Mix in a teaspoonful of cold water, a few drops of oil of vitriol, touch the spot with a feather dipped in the liquid.—[Ex.

[Oxalic acid is better and more convenient for such a purpose than the oil of vitriol.

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NEW YORK, JUNE 17, 1854.

Stamping Patented Articles.

We have received a letter from a correspondent, stating that as the subject of stamping the word "patent" on articles is now attracting much public attention, he wishes to know if the law is complied with by a patentee who merely stamps the year in which his patent was granted, upon the patented article which he sells. The simple stamping or impressing the year in which the patent was granted, upon the article sold, does not fulfill the requirements of the law, and those who thus stamp their articles stand liable of being sued for a violation of Section 6, of the Patent Act of 1842. It says, "all patentees and assignees of patents hereafter granted, are required to stamp or engrave on each article vended or offered for sale, *the date of the patent*, and if any person or persons, patentees or assignees, neglect to do so, he, she, or they shall be liable to the same penalty, to be recovered and disposed of in the manner specified in the 5th section of this Act," that is $100 for each article sold. Now what is the date of a patent? Not the year merely, (1848 or 1852,) but the day, month, and year, as recorded on the face of the patent. It is certainly a very plain question, and yet there are but very few patentees who seem to understand it or desire to live up to it; that is, judging from the number of patented articles sold with the inscription only of "patented 1852, &c." This law was made to inform the public when the patent for any article or machine would expire, and this cannot be done unless the very day on which the patent was granted is stamped or printed on the patented article or machine.

The word "Patent."—Although much has been done in this city recently, to those who illegally stamp unpatented articles with the word "patent" on them, we must say that the law is still openly and broadly violated every day in our city and other places. In almost every retail dry goods store in this city, cotton socks may be seen in its windows with the word "patent" printed on them. The merchants who sell them are quite ignorant of the law, and are innocent of any desire to deceive the public, but this cannot be the case with the manufacturers who print the word "patent" on these goods. They do it for a certain purpose, and that is to deceive the public into a belief that a patent has been granted for such articles, as being superior in some respects to others. Those who are openly violating the law by printing and stamping the word "patent" illegally on articles which they manufacture, cannot reasonably expect to escape its penalties long. If they would act wisely for their own interests, let them at once "cease to do evil and learn to do well."

Coal—Its Price.

The retail price of coal in the city of New York at present, is seven dollars per ton, and it is asserted by coal dealers that it will be as high as nine dollars in the month of August, and ten dollars in the month of November. This is a very high price for coal, nearly double from what it was three years ago. What may be the causes of such a great rise in the price of fuel we cannot tell, but we regret it greatly, for it must cause much suffering among the poor of this and other cities—north and east—during the coming winter. The wages of the miners have been raised during the present year, but that cannot be the sole cause, as the miners, we have been told, do not now receive more than seventy-five cents per tun—twenty-five more than they were paid last year—while the coals are higher by two dollars per tun. The inhabitants of New York City are entirely dependent on Pennsylvania for anthracite coal, and we suppose that as much as $5,000,000 is paid by them for that fuel every year. No complaint was heard while anthracite was obtained at a fair price—from five to six dollars per tun, but at present universal sorrow is felt on account of its present and anticipated high price. When it is considered that fuel is as necessary in our climate as houses and clothes, and as "the poor will never cease out of the land," we cannot but anticipate an increased amount of suffering among this class in our populous city. Some better means should be provided for bringing coal to New York direct from the mines. A railroad for that purpose through New Jersey, and running into the heart of Pennsylvania, will soon be opened, but it will not be sufficient to carry a necessary yearly supply. It is also time that some gigantic enterprise was projected for opening up the resources of the great western coal fields to the eastern seaboard. The anthracite coal fields of Pennsylvania—excellent though they be—are but specks on the coal map of our country, and so far, they have been our sole supply; the great western coal fields have been as yet sealed up to the Eastern Atlantic cities. How long this will continue we cannot tell, but we are positive that a great coal railroad to the Ohio Basin, is more of a necessity to New York City by itself, than the Pacific Railroad.

Which is the Best Water Wheel.

Since we published the letter on page 251, with the above caption, we have received a great number of letters on the subject from different correspondents. Every one of them takes exceptions to the conclusions of the author of that letter, who gives the preference to the under-shot wheel. We have not published any of these letters, from the fact that they have generally contained opinions similar to our own, and which have been already published in our columns. The subject of "which is the best water wheel," is pretty well understood, so far as the principle of applying the force of the water is concerned, but that letter shows that from bad construction, or application, of the best wheels in principle, the very lowest in theory may be made to give better practical results.

Anastatic Printing.

A correspondent, connected with the printing business in one of our Western cities, writes to us desiring information respecting the above named art. We have never seen it practiced, and we suppose it is but little used. We have been informed that it consists simply in moistening, with very dilute nitric acid, the print or sheet of letter press, &c., to be transferred, then laying it upon a clean plate of zinc, and passing it through a roller press. The acidulated water softens the ink of the print or sheet, which leaves a reversed impression on the zinc plate, and when an ink roller is passed over its face, the ink adheres to the lines of the impression, which gives a perfect fac-simile of the original copy to a sheet of white moist paper laid upon the zinc plate and passed through the press.

Report of the Board of Education of New York City.

We have received a copy of the Twelfth Annual Report of the Board of Education of the City and County of New York, and it makes us thankful for our Common School system. This system was first introduced into this city in 1843, when the first of such schools was erected. At the present moment there are 224 schools in the County—25 of them being devoted to the teaching of colored children. The whole number of children taught during the past year in all of these schools was 123,530, and the whole amount of money drawn for the purposes of education—including buildings, was $513,902,17. No less than 25 evening schools were kept open for 14 weeks, for the benefit of young persons, who are compelled to labor during the day. The youth of New York City enjoy unnumbered privileges and blessings, as regards education, unknown to our forefathers.

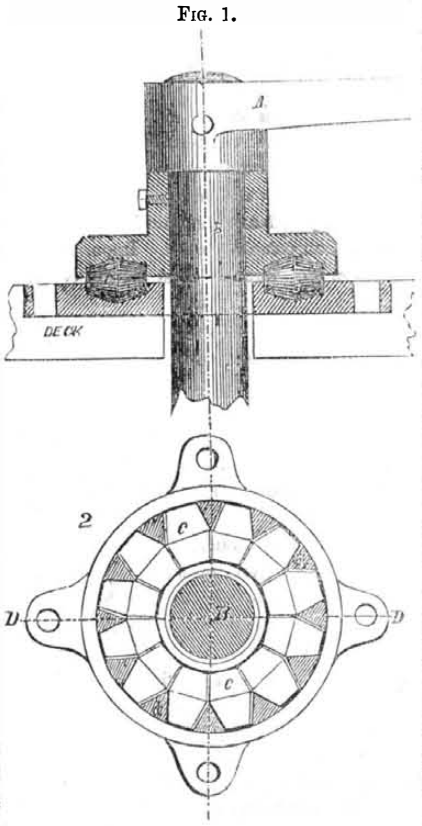
A New Cutting Machine Wanted.

A correspondent writing to us from Anderson, Texas, wishes to call the attention of our readers to a machine which will soon be required in various parts of our country, for cutting and trimming hedges of the Osage Orange. These hedges require trimming in Texas, about every three months, and at the present moment a number of such machines might be sold in that part of our country. For trimming hawthorn hedges a large pair of shears, about two feet long in the blades, are used in England, and one man can go over a considerable number of rods of hedge in a day.

Patent Anti-friction Roller Box.

The annexed figures are views of an improvement in anti friction roller boxes, for the bearings of shafts, &c, for which a patent was granted to George T. Parry, on the 2nd of Aug. last. Figure 1 is a vertical section of the improved box applied to the steering apparatus of a vessel, taken through line, D D, of fig. 2, which is a horizontal view.

Fig. 1.



The nature of the improvement consists in the employment of a series of rollers made in the form of double frustums of cones united at their bases, and adapted to run in grooves of nearly corresponding form made in the surfaces, between which they are interposed.

The inner frustums of the rollers and the corresponding parts of the surfaces of the grooves between which they are interposed, are made on bevels proportioned to the diameter of the rollers, and the grooves in which they run, such as would represent the pitch lines of bevel cog wheels of the same proportions.

This will insure the rolling of the rollers about a common center without slip, and to prevent the said rollers from being wedged outwards or forced out of their proper paths, the outer ends of the rollers are made of reversed frustums, with the surface of the grooves nearly of a corresponding bevel, so that when the rollers are in place between the two surfaces, they—the surfaces—shall be in contact with the inner frustums of the rollers throughout their length, but the said surfaces, instead of being in contact with the outer frustums deviate a little from it, by which combination the rollers are prevented from being forced out of their true path, and hence roll around, bearing the weight on the surface of the inner frustum, thus avoiding the practical objections to methods heretofore practiced.

A is the tiller, and B the shaft of the helm, which is secured to the top collar plate in any well known way; *c c* are a series of rollers, each of the shape of two frustums of cones united at the bases, and placed in recesses of corresponding form, made in the deck and the top-supporting collar plate of the helm—thus forming a box as shown in figure 2. The width of the roller grooves is a little more than the length of each roller, to allow them a little end play without coming in contact with the sides of the grooves. The inner frustums of all the rollers, bevel of the grooves, and the inner surface of the collar—like that of the step of any vertical shaft, should be on lines coinciding with the axes of the rollers and of the shaft, as in determining the pitch lines of bevel cog wheels, so that as the shaft is moved round and the series of rollers so carried, they shall, by their conical form, travel in a circle of which the axis is the center. The outer frustums of the rollers are the reverse of the inner frustums and a little more abrupt, otherwise the surface of the grooves in which this part of the rollers run, should be slightly flattened, so that the outer frustums will run in contact with the surface of the grooves at the base, and be very slightly separated at the outer end. All the rollers thus made and arranged, travel round the axis of the shaft without slip, and the tendency to force the rollers out of the true circle, by the pressure upon them, is resisted.

Various plans of employing friction roller boxes for shafting, &c., have been tried and have failed, from faulty construction, unequal wear of rollers, and the principle of their arrangement. It is believed that this invention has provided against the faults of the other roller boxes which have been tried, and that it is a very valuable improvement, considering the range and extent of its application, as it is adapted for turn-tables on railroads, the shaft boxes of propellers, other kinds of shafting, cranes for elevating heavy weights, swing-bridges, lock-gates, &c. It has been satisfactorily applied to the U. S. Steam Frigate, the "San Jacinto," the steamship "Peytona," now running between the Sandwich Islands and San Francisco, and it has been adopted by the Reading Railroad Co.

The assignees of the patent are J. Rice & Co., No. 90 South Fourth street, Philadelphia, who are prepared to make iron turn-tables upon this improved plan, and from whom more information may be obtained by letter.

Georget's Disinfectant—Errata.

In describing the effect we saw produced by a new disinfectant in last week's paper, we mentioned that the inventor was desirous to engage with some one to bring his invention out, and advance the patent fee to secure the invention in this country. Mr. Georget has written us a note in reply to the paragraph alluded to, and disclaims any such desire, and adds if he wished a patent he could take it himself.

The erroneous statement which Mr. Georget accuses us of making, either arose from himself or his agent talking very bad English, or else he has changed his intention since he made the experiments alluded to, for we presented the matter just as we understood it, and felt considerable self-satisfaction in thinking we had done a foreign inventor a favor by gratuitously recommending his invention to public attention and patronage, but alas! our services were not appreciated, and instead of receiving the Frenchman's thanks, as we expected, he writes us as if he thought we intended to insult him.

Louisville Locomotive Works.

On page 271 we gave a brief account of the large machine works which had been established during the past year in the city of Louisville, Ky., by Messrs. Olmstead, Tenneys, & Peck, for constructing locomotives and cars. By an advertisement on another page of the "Scientific American," we perceive that this company not only make all kinds of rolling stock for railroads, but all kinds of machine tools, such as lathes, planers, drills, &c., and also castings of every description. Louisville is favorably situated to carry on extensive machine works. For steamboat-engine building, the mechanics of that city have long enjoyed an excellent reputation both as it respects practical skill and high intelligence.

Maryland Institute Fair.

We would direct the attention of our readers to the advertisement of the Maryland Mechanics' Institute, respecting its next Annual Fair in the City of Baltimore. This Institution has earned for itself a very high character, both at home and abroad, with respect to the gentlemanly deportment of its managers, and the enterprize of its members. Its Fairs have always been ably managed.

By the latest accounts from China, the revolutionists were within fifty miles of the capitol—Pekin—and had possession of the Great Canal.

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(For the Scientific American.)

Marine Boilers.

The furnace of a boiler should be so constructed as to render combustion as perfect as possible, but it can do no more than produce carbonic acid. If only one half of the oxygen necessary to form carbonic acid, combines with carbon, the result will be carbonic oxyd, a product of imperfect combustion. A certain supply of atmospheric air, therefore, is necessary. But this supply may be too copious or too scant; it may enter the furnace too rapidly or too slow, but it cannot be too high for rapid combustion. It is also evident that the quality of the fuel must have a controlling influence upon these various conditions. Wood as a fuel for marine boilers is out of the question,—we can only consider mineral coals—anthracite and bituminous—as fit for ocean steaming. It is not my intention here to analyze these varieties, I only notice them in so far as their peculiar qualities require peculiar mechanical arrangements for good combustion.

Soft or bituminous coal requires more time to be consumed, economically, than hard coal. The large bulk of hydrogenic and bituminous compounds, mixed up with floating particles of carbon, which result from the burning of soft coal, require to be thoroughly mixed with heated air before perfect combustion can take place. The mechanical arrangements to effect this are of great importance, but may be overlooked when hard or anthracite coal is consumed. This fuel admits of a much more rapid consumption, and of a powerful blast, while the draught of a soft coal furnace should not be very strong.

Experience has not yet settled the most economical speed of consumption of mineral coals. Watt's rule was to allow one superficial foot of grate surface for every ten superficial feet of heating surface, and this rule produces good results with natural draught. The boilers of the Collins' steamers are undoubtedly the most efficient and best constructed boilers now in use, either here or in Europe. According to Mr. Isherwood, those of the "Arctic" contain 0·357 feet of grate for 11·84 feet of heating surface, for every effective horse-power, or 33 feet of heating surface for 1 foot of grate.

According to the same author, whose account of the performance of the "Arctic," published in the "Journal of the Franklin Institute," appears to be reliable, the average consumption of anthracite during six trips, was 7980 lbs. per hour. The aggregate grate surface of the four boilers of that steamer is 588. feet, which gives 13·57 lbs. of coal per hour for each foot of grate. In boilers of ordinary construction, with natural draught, half the weight of soft coal would be a fair consumption.

Chemists who have examined the evaporative power of various fuels, agree that one lb. of good mineral coal, perfectly consumed, will evaporate over 11 lbs. of boiling water. Experiments on a larger scale will seldom evaporate more than 9 to 10 lbs. The boilers of the "Arctic," during those six trips, evaporated 7½ lbs. of steam from water of 110° by one lb. of anthracite, and this is one of the highest results that has been obtained in the regular working of marine boilers. It is evident, therefore, that there is room left for improvements. There is still a waste of fuel in the Collins' steamers, which arises from imperfect combustion, the result in part of a faulty construction, and no doubt in part is attributable to imperfect stoking. Much of course depends upon the mode of firing, nor is it always practicable, to carry on this important part of the service according to the best rules.

In attempting to improve the construction of boilers, we may receive good hints from an examination of the condition and working of other furnaces, in which good combustion and a high degree of heat are important objects. Furnaces used in the manufacture of iron, such as blast, puddling, heating, and annealing furnaces, may be referred to.

Perfect combustion can only take place under such circumstances as are favorable to the developement of intense flame and heat. Aside from the necessary quantity of air, supplied at a certain rule, and heated if possible, there are other contingencies upon which success depends: a very important one is the nature of the material which surrounds the furnace, forms its walls and roof, and comes into immediate contact with the fire. The question then at once arises, can the process of combustion be successfully carried on in a narrow furnace, surrounded by iron walls and roof, in contact with water, which absorbs the heat at a rapid rate? Most certainly not. Who would undertake to heat and puddle iron in a furnace built of iron plate in contact with water? Iron water boshes are sometimes resorted to, but they have a tendency to retard the process, and should be avoided if possible. Such furnaces are constructed of good fire-brick, which is a slow absorbing and slow conducting material, and after being glazed over by the strong heat, will strongly reflect it. By this strong reflection and non-absorption, the process of combustion is supported in an eminent degree, so much so that a degree of heat is obtained far exceeding the temperature of any boiler furnace. As little heat as possible should be absorbed by the walls or roof of a boiler furnace; every endeavor should be made to reflect and concentrate the fire. Imperfect combustion in any furnace most generally arises from the fact that the heat is not allowed to accumulate and to concentrate. The sole object of a boiler furnace should be to favor combustion, and to develope flame and blaze, and this can only be accomplished under the influence of a highly concentrated and excited action. The caloric stream thus fully elaborated, on leaving the furnace, is then allowed to expand itself, and to be absorbed by the interior surface of the boiler.

I may remark here, by way of general comment upon furnaces for heating houses, that the whole tribe of *Patent Furnaces*, with which the country is blessed, have all, more or less, grown out of erroneous notions, and are the offspring of a profound ignorance of the laws of combustion and of heat. Aside from the vitiated air they supply, they are all wasting fuel at an enormous rate. This subject is better understood in the north of Europe, where long winters and scarcity of fuel have taught men to build furnaces on correct principles.

The temperature of a puddling or heating furnace has to be raised to about 3000°, this can only be accomplished under the reflecting and reverberatory action of the walls and roof. A concentrated blast may produce a greater heat at a certain point, but it will not be diffused. Under the above circumstances, and by means of a strong blast, from three to four times as much fuel may be consumed on the same surface of grate in one unit of time, as can be accomplished in a common boiler furnace. In a well constructed heating furnace, at my rolling mill at Trenton, N. J., 8,000 lbs. of anthracite are consumed in ten hours for the heating of 18,000 lbs. of charcoal hammered blooms, on a grate of twenty superficial feet, which is equivalent to 40 lbs. per hour on one foot of grate. This cannot be accomplished in the furnaces of the Collins' steamers, which consume 13½ lbs. per hour on one foot of grate.

In the above a principle is delineated, which to my knowledge has been entirely overlooked, and which must be satisfied before we can attain much higher results.

Another glaring defect in all marine boilers, those of the Collins' steamers not excepted, is the want of room, necessary for a due mixing of the gases, and a full developement of the blaze.

Large quantities of fuel in a narrow and low furnace, cannot be consumed without waste. In order to become fully excited and most positive in its action, the blaze of a fire must be at liberty to extend and elongate in the direction of the draught, to a distance corresponding to its bulk, and without meeting absorbing obstructions. For illustration, I again refer to heating and puddling furnaces. This fact can be readily ascertained in an experimental furnace with adjustable roof. The brightest fire will burn under the highest roof, while the depressing action of a low roof will damp it and reduce the temperature of the furnace.

Economy of space is an important consideration in the planning of a marine boiler, but this may be carried so far as to seriously interfere with the grand object of the boiler. In an efficient boiler, the extension of the furnace should form an empty area, which serves as a receptacle for the caloric stream, where the gases become thoroughly mixed and fully ignited, before their caloric is expended upon the boiler surface. And for the purpose of allowing ample time to the heat to be absorbed by the tubes, the above space, together with the tube area, should be as large as possible. The arrangement must be so, that the draught between the furnace and the chimney should be very slow, so that all the caloric, or nearly all may be absorbed before the unconsumed gases are allowed to escape.

The boilers of the "Arctic" have 33 feet of heating surface for 1 foot of grate surface; this allowance is scarcely enough for hard coal; 40 to 1 will not prove an excess. But this proportion depends in a great measure upon the velocity of the draught, through the area which contains the tube or heating surface. The larger this space, or the longer its extent, the slower the motion of the gases will be, or the more extended their travel, consequently the longer they will remain in contact with the tubes. It is a very general defect in marine boilers, that the draught from the furnace to the chimney, through the tube area, or through the flues, is nearly uniform, and too rapid. The "hanging sheets" in the boilers of the Collins' steamers were designed to arrest this rapid flow, but they are not sufficient. The fact is that the common plan of flue or tube boilers does not admit of a thorough application of the important principle in question, hence the necessity of a radical change.

Other questions of importance have to be considered in the planning of a marine boiler. Strength, facility of construction and repairs, provisions against unequal contraction and expansion, against incrustation, facility of blowing out, and of cleaning, safety against exposure of heating surface, when the ship is rolling or careening, all these are important points, but more or less understood. By the above remarks I have only attempted to direct attention to such points as are not generally understood, and consequently neglected.

In a new plan of boilers, which I have invented, all the essential conditions of perfect combustion, radiation, and absorption, are fulfilled, and is calculated to produce much higher results than have been obtained heretofore.

In conclusion I will yet remark that the subject of *artificial* draught is in a great measure an open question yet. The common fan-blast will answer very well under certain conditions, but in marine boilers, I am satisfied, *exhaustion* by proper mechanical means will work better. The control of large and connected fires can be better maintained by *exhaustion* than by *blast*, and also more economically.

JOHN A. ROEBLING, Civil Engineer.

Niagara Suspension Bridge, May 29, '54.

Copal Varnish.

As we have had many inquiries respecting the preparation of the above varnish, the following article by Prof. Heeren, taken from "Dingler's Polytechnic Journal," will be read with interest:—

"There is no difficulty in dissolving copal in fatty and volatile oils when the resin has been previously fused; by this process, however, a more or less distinct coloration is produced, and the natural hardness of this fine resin is injured. It has therefore been often attempted to dissolve copal without previous fusion; but, as is well known to all who have occupied themselves with this question, great difficulties have been found in effecting the solution. Directions have been given to soak the pounded copal in ether or ammonia until it swells up into a gelatinous form, and then to dissolve it in strong alcohol; but this process never succeeded with the author though he tried it repeatedly. Others recommend hanging the copal in a small bag in a retort, in which absolute alcohol is gently boiling. This method also failed, in the author's hands, in producing even a tolerably concentrated varnish.

The best prescription appears to the author to be that given by Freudenvoll in his treatise on the preparation of varnishes. According to him, 4 ozs. of West India copal are dissolved in a mixture of 4 ozs. oil of turpentine, and 6 ozs. alcohol of specific gravity 0·813; or a mixture of 3 ozs. sulphuric ether; 4 ozs. oil of turpentine, and 4 ozs. alcohol of specific gravity 0·851.

When engaged in testing this process, which gave very good results, the author found a small variation, which he describes as follows, particularly efficacious:

Two sorts of copal occur in commerce, the East and West Indian. The former is usually in small, irregular, rounded pieces, with a finely-verrucose surface, the resemblance of which to the skin of a goose has obtained for it the name of "goose copal." It is of a somewhat yellow color, and is preferred for the manufacture of a somewhat oily copal varnish, because it acquires less color by fusion than the West Indian. The latter does not possess a warty surface; it is very pale in color, often nearly colorless, and occurs in large irregular fragments, partly with a rounded surface and partly with a shelly fracture.

West Indian copal only can be employed in the following solution, the East Indian forming only gelatinous lumps, but never a solution. The solvent is a mixture of 60 parts by weight of alcohol of specific gravity 0·813; 10 parts by weight of sulphuric ether; 40 parts by weight of oil of turpentine, in which 60 pounds of copal are to be dissolved for the production of a varnish of an oleaginous consistence. Solution takes place, even in the cold, without any previous gelatinous swelling of the copal; but it is effected much more rapidly with the assistance of a gentle heat. As, however, single pieces are often found in the West Indian copal, which instead of dissolving only swell up in the fluid, by which the rest of the solution is spoiled, it is advisible to select only the large and perfectly clear pieces for the purpose of varnish making, and to test each first of all as to its solubility. This little trouble is richly repaid by the certainty of the result.

To test this quality, a small splinter of the copal is put into a small test tube; a little of the solvent fluid is then poured in, and the whole is heated. If the copal dissolves completely in a few minutes without becoming gelatinous, it is good.

When the desired quantity of good copal has been got together in this manner, it is to be pounded to a tolerably fine powder, which is to be put into a glass retort or flask, the necessary quantity of the solvent added, and the whole heated and shaken until solution is effected. To clear the varnish, which may appear somewhat dull, from dust or other impurities, it may be allowed to stand a long while until these settle; or if it be desired to effect this quickly, it may be filtered through blotting-paper, placed as a filter in a glass funnel; the filter must not project above the edge of the funnel, so that the latter may be closed by a glass plate laid over it. The passage of the thick varnish is of course very slow, but the varnish is obtained perfectly clear in this manner; and if the copal employed were very clear, it is nearly colorless. It dries rapidly, but like all turpentine varnishes, retains a slightly sticky surface for some days."

Cooling Soda Water; Saving Ice.

A. M. Denig, of Columbus, Ohio, has made a very useful improvement in the cooling of liquors, such as soda water, whereby considerable ice is saved. It consists in the arrangement of a single flued copper chamber, inside of a non-conductor similar to an ordinary water cooler, and placing the whole apparatus upon the counter instead of under it. The ice being placed in the flue (which is of sufficient capacity) keeps the soda water always cold at the place where it is drawn. The stopcock inside of the non-conducting chamber, is attached to the cooling chamber on one side, and the exit pipe on the other,—thus drawing every glass of soda from immediate proximity to the ice. The saving of ice in the use of this improvement is said to be nearly 50 per cent. over any other mode, twenty pounds being amply sufficient to run a fountain any day during the season. To those who do not continually draw soda, and to whom saving ice is any object, this apparatus is no doubt a valuable acquisition.

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TO CORRESPONDENTS.

M. P. M., of Vt.—Our time is too much occupied already to accept an agency of any description. Patent rights we never sell or negotiate in this country—our foreign agents are willing to receive "firstrate" inventions on sale, but they must first be secured by patent in the countries where a party wishes them introduced.

A. R. McD., of Ala.—In our opinion no real gain would be obtained by digging the pit below the proper hight of the fall. The power is in the water, and that is according to the quantity and hight of fall. A lever does not create power; if it is extended it has to pass through more space, consequently a gain of power is a loss of time, and vice versa. Give the matter more study, and you will see that we are right.

J. S. B., of N. V.—There is a foreign work on Fresco Painting (Merrifield's) the cost of which, we think, is about two and a half dollars. Any importer of books will get it for you.

E. F., of Conn.—We do not wish to criticise any more of the person's theories to whom you refer.

R. D. B., of Me.—Caustic alkali will reduce your woody materials to pulp if they are ground very fine.

J. McC., of Pa.—We cannot give you the information you desire. We understand you to mean the manufacture of paints.

W. A. S, of N. Y.—The wheel was obtained of one of the persons named by you.

G. U. H., of N. Y.—One of yours will meet with attention next week.

S. C. T., of Geo.—There is no novelty in your alleged improvement in saws to enable them to saw and plane at the same operation. We have often seen saws made on this principle.

D, P., of Pa.—Your claim to adjustable or shifting arms for fan blowers as shown in the sketch appears to be a new contrivance, and we think a patent can be secured for it.

J, P. D., of Pa.—There are a number of machines in use for turning irregular forms, and one of the best with which we are acquainted is the Beers Machine. For further particulars address Smith Beers, Naugatuck, Conn.

J. H. C., of R. I.—We discover nothing new in your sketch of the steam engine, but perhaps it is because your sketch is so imperfect that we do not fully understand it—can't you send us a model?

E. S, of N. Y.—To enable us to judge of the patentability of your horse rake, you should describe its mechanical construction; the simple fact of great results being produced by it with a boy 10 years old, would not of itself be considered a patentable feature at the Patent Office.

Money received on account of Patent Office business for the week ending Saturday, June 10:—

J. R. T, of Ill,, $35; F. E. H., of Conn., $25; E. M., of N. J., $35; C. R., of Ga., $55; I. W. McG., of Pa., $10; D. & S., of N. Y., $25; C. N. W, of N. C., $30; H. & N,, of N. Y., $30; I. G. McF., of Pa., $35; E. W. D., of R. I., $25; H. & P., of R. I., $30; A. M., of N. Y., $30; G. O., of N. Y., $25; J. H., Jr., of Wis., $10; T. & W., of Mo. $20; H. C., of N. Y., $10; H. S. C., of Ind., $25; H. M., of N. Y., $30; J. D. W., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 10:—

F. E. H., of Conn.; N. S. S., of L. I.; H. F. B., of Ind.; E. M, of N. J.; N. B. L., of Ind.; D. & S., of N. Y.; C. W. D., of N. J.; E. W. D., of R. I.; H. M., of N. Y.: J. D. W, of N. Y.; J. B., of N. Y.; H. L. C., of Ind.

A Chapter of Suggestions, &c

PATENT LAWS—The seventh edition of the American Patent Laws and Guide to the Patent Office For sale at this office, price 12 1-2 cents.

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KENTUCKY LOCOMOTIVE WORKS—Corner of Kentucky and Tenth streets, Louisville, Ky.—The proprietors of the Kentucky Locomotive Works would respectfully inform Railroad Companies and the public generally, that, having completed their establishment, they are now prepared to receive and execute orders with fidelity and dispatch. They will contract for Locomotives, Passenger, Baggage. Freight, Gravel, and Hand Cars. of every style and pattern, as well as all kinds of Stock and Machinery required for railroads. Particular attention will be paid to Repairing, for which they have every facility. They are also prepared to contract on favorable terms for building all kinds of Machine Tools, such as Turning Engines, Lathes, Planers, Drills, Slotting, Splining, and Shaping Machines of every variety of pattern. Having also a large Foundry connected with the establishment, orders for castings are solicited, and will be filled with promptness. Car Wheels of any pattern can be furnished on short notice. Double and single plate and Spoke Wheels of all sizes constantly on hand. Communications or orders must be addressed to OLMSTED, TENNEYS & PECK. Louisville, Ky. 40 6m.

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EXTENSION OF TIME.—The period for receiving proposals for Superstructure of Bridges and Trustle work of Huntingdon and Broad Top Railroad, has been extended by order of the Board of Directors to Saturday evening, June 24, 1854, Huntingdon, Pa., June 7, 1854. S. W. MIFFLIN, C. E. 40 tf

FOR $1000 EACH—An assignment will be made, (or security given therefor) of one third the rights patent for England and France, of a breech-loading and self-priming rifle, preventing escape at the breech, simple and durable arrangement and construction, and capable of one shot in five seconds, or one hundred in twelve minutes. U. S. Patent applied for. Addres J. C. DAY, Hackettstown, N. J. 39 5*

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MACHINISTS TOOLS—Power Planers 4 to 16 feet long, weight 1,000 to 10 000 lbs. Engine Lathes, 6 to 19 feet long, weight 1,700 to 8,400 lbs., swing 21 to 38 inches. Hand Lathes, Gear Cutters, Drills, Bolt Cutters, Slide Rests, Chucks, &c., of best materials and workmanship constantly on hand, and being built, also the best Grain Mills in the country, "Harrison's Patent." For cuts giving full description and prices address NEW HAVEN MANUFACTURING CO., New Haven, Conn. 38 tf.

ROTH'S ANTI-CHLORINE.—Geo. F. Wilson, Providence, R. I., has been duly appointed Agent for the sale of "Roth's Anti-Chlorine" for the New England States. Persons desiring to obtain licenses for their own use, or to purchase this very superior preparation for the removal of chlorine from bleached fabrics and paper stuffs, will please make application to him. HACKER, LEA, & CO., Philadelphia, Dec. 1, 1853. Mr. Wilson's office is at 22 Canal street, third floor. 38 3*

MACHINERY.—S. C. HILLS, No. 12 Platt-st., N. Y. dealer in Steam Engines, Boilers, Iron Planers Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's, and Law's Planing Machines; Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines; Belting; Machinery Oil, Beal's Patent Cob and Corn Mills; Burr Mill and Grindstones; Lead and Iron Pipe, &c. Letters, to be noticed, must be post-paid. 27tf eow

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25eotf Machinery Agent, 12 Platt st, N. Y.

NORCROSS' ROTARY PLANING MACHINE. The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringement of the Woodworth Patent.

Rights to use N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.

The printed Report of the case with the opinion of the Court can be had of Mr. Norcross. 36 tf

UNITED STATES PATENT OFFICE,
Washington, June 5, 1854.

ON THE PETITION of Frederick J. Austin, of New York, praying for the extension of a patent for cutting paper and trimming books," for seven years from the expiration of said patent, which takes place on granted to him on the 16th June, 1841, ante-dated December 16th, 1840, for an improvemement in "machines the sixteenth day of December, eighteen hundred and fifty-four.

It is ordered that the said petition be heard at the Patent Office on Monday, the 4th of December next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 24th of Nov.; depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York; Daily Courier, Buffalo, N. Y., and Post, Boston, Massachusetts once a week for three successive weeks previous to the 4th day of Dec. next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 40t3

THE SEVENTH ANNUAL EXHIBITION—OF THE MARYLAND INSTITUTE—Will take place on the 18th of September next, at the spacious Hall of the Institute, Baltimore. Mechanics, Manufacturers, Artists, Inventors, and others, in the State of Maryland, as well as the country at large, are respectfully invited to avail themselves of the opportunity thus afforded, to display their taste and skill in the collection about to be made. The Maryland Institute is now established upon a footing which enables the managers to hold out stronger attractions than, perhaps, any similar Institution in this country. The central position of the city of Baltimore, and its contiguity to the seat of Government, ensure the most extended facilities for an exhibition of the works of art and mechanical skill, which may be placed in charge of the Institute; and the great care taken in the appointment of suitable and impartial judges to establish the grade in which each contributor is entitled to stand, and to pronounce upon the certificates of merit, give earnest of the desire of the Managers to avoid all ground of complaint in this most delicate department of their labors. The purpose of the Managers will be to make the approaching exhibition one of the most attractive that has heretofore taken place in this country. Their splendid Hall is now complete in all of its appointments, and is admirably adapted, as is well known, to the accommodation and display of the objects of taste and interest, of whatever class or description, which may be entrusted to them by those engaged in the mechanical pursuits. The Board of Managers earnestly invite the co-operation of the mechanics and industrial classes throughout the country, in contributing to the important object they have in view. Circulars with rules and regulations, and any other information in reference to matters in detail, will be promptly given by addressing, post-paid, the actuary of the Institute, Mr. John S. Selby. THOS. SWANN, Chairman; A. Denmead, Thomas Stow, C. W. Bentley, J. F. Meredith, Enoch Pratt, Thos. J. Lovegrove, W. Prescott Smith, Thomas Trimble—Standing Committee on Exhibition. 39 2

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MACHINERY DEPOT.—J. W. HOOKER, 36 Lloyd street, Buffalo, N. Y., commission merchant, and dealer in all kinds of machinery, is prepared to fill orders for Lathes, Planing Machines, Drills, Universal Chucks, Car Wheel Borers, Rubber and Leather Belting, Oils, Millstones, Portable and Stationary Engines, Boilers and Machinery generally. 38 4*

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MODELS—Of all kinds made and warranted to answer the requisitions of the Patent Office. Post-paid communications strictly confidential. Address J. G. ARNOLD, Worcester, Mass. 31 10*

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STAVE AND BARREL MACHINERY—HUTCHINSON'S PATENT.—This machinery, which received the highest award at the Crystal Palace, may be seen there in operation during the ensuing season, Cutting, Jointing and Crozing Staves and Turning Heads. Staves prepared by this process are worth to the cooper from 20 to 40 per cent more than when finished in another way. Applicable alike to thick and thin staves. Apply to C. B. HUTCHINSON & CO., Auburn, N. Y., or at the Crystal Palace. 34tf

KRUPP'S BEST CAST STEEL—Suitable for Mint and Plater's Rollers, also of large size (72x18 inches diam.) for rolling iron, copper or brass. Pistons of Steam Engines, and Shafts for Steamboats, not exceeding six tuns weight in one piece. Also the celebrated Cast Steel Axles and Tire, made from a solid bar without welding. Agents, THOS. PROSSER & SON,
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STAVE MACHINERY.—The "Mowry Stave Cutter and Jointer Combined," which received the highest award at the Crystal Palace, is the only machine that ever undertook to joint a stave properly at the same time that it was cut and dressed, without rehandling. One man tends the machine and turns out from a solid block of wood ninety staves a minute, ready for the truss hoop. It is not only the best in use, but for slack work we challenge the world. For machines and rights in New York, apply to CHARLES MOWRY, Auburn. For machines and rights in other parts of the United States, apply to GWYNNES & SHEFFIELD, Urbana, Ohio. 29 tf

MINING MACHINERY—Of most approved construction, furnished by FRED'K COOK & CO, Hudson Machine Works, Hudson, N. Y. 15 6m

JOHN PARSHLEY, No. 5 and 7 Howard st., New Haven, Ct., manufacturer of Machinists' Tools, and Steam Engines, has now finishing off 25 Engine Lathes, 6 feet shears, 4 feet between centers, 15 inches swing, and weighs about 1100 lbs. These Lathes have back and screw gear, jib rest, with screw feed, and the rest is so arranged that the tool can be adjusted to any point the work may require, without unfastening the tool, hence they possess all the good qualities of the jib and the weight lathe; they are of the best workmanship. Price of Lathe with count shaft and pulleys, $155 cash. Cuts, with full description of the lathe, can be had by addressing as above, post-paid. Also four 30 horse power vertical Steam Engines with two cylinders. Price of engine with pump and heater, $800 cash. For particulars address as above. 35tf

$100 REWARD—To the Manufacturers of Bank Note Paper. The Executive Committee of the Association of Banks for the Suppression of Counterfeiting, hereby offer a reward of One Hundred Dollars for the best specimen, in the opinion of the Committee, of Bank Note Paper, of not less than five hundred sheets, which may be submitted to them on or before the 1st day of January next. All paper submitted, except that selected by the Committee, to be returned to the persons submitting the same.

J. M. GORDON, Secretary.
Boston, Mass., March 31 .1854. 31 15*

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VICTOR BEAUMONT,
33 10* Consulting Engineer, 74 Broadway, N. Y.

1854—MICHIGAN CENTRAL R. R. LINE,—D. W. WHITING, Freight Agent for Railroad and the enormous new steamers "Plymouth Rock," "Western World," and "May Flower,"—and also General Forwarder, will forward freight of any kind, by any mode of conveyance, to any destination, with dispatch and at the lowest rates; has trucks and machinery and (having been a practical machinist has all the skill necessary) for the safe and expeditious handling of any machine or heavy article, such as Locomotives, Steam Engines and Boilers, Engine Lathes, Church Bells, Safes, &c. Mark packages care "D. W. Whiting, Buffalo;" goods thus consigned take precedence with the above boats in all cases. 32tf

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Portable Mortising Machine, $20
Bushnell's Iron Drill, $25
All orders should be addressed (accompanied with the cash) to MUNN & CO., 128 Fulton st., N. Y.

WHITE STRAW PAPER—For Newspapers.—A Mellier, the patentee, having established his process at Nixon & Xeinour's Mills, Manayunk, where the paper for the Philadelphia Ledger has been made daily from straw since the 12th of April, is now ready to sell licenses and make arrangements for establishing the process elsewhere. Apply to A. MELLIER & V. BEAUMONT, 74 Broadway, where specimens of half stuff, stuff and paper may be seen. 33 10*

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
CHARLES W. COPELAND,
35 tf Consulting Engineer, 64 Broadway.

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
27tf GEO. W. BEARDSLEE.

STATIONARY STEAM ENGINES—The subscriber is now prepared to furnish, with or without pumps, boilers, &c., Horizontal Engines on iron bed frames, good strong, substantial, plain finished engines that will do good service, say from 4 horse, $215, to 30 horse, $1,037: they have Judson's patent valves, and will be warranted to work well. S. C. HILLS,
31tf 12 Platt st, New York.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16 1y*

SEWING MACHINE—The Office and Warerooms of the Wheeler & Wilson Manufacturing Company, for the sale of their Sewing Machines, is removed to No. 343 Broadway, where the public are invited to call and examine them in practical operation. 31 13*

NORRIS WORKS, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping, and Portable Engines, and Mining Machinery of every description.
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Scientific Museum.

Scientific Memoranda.

ANTEDILUVIAN DISCOVERIES—The Swiss journals give the following details relative to the discoveries recently made in consequence of the extraordinary fall in the water in the Lake of Zurich. About one hundred feet from the right bank of the Lake, opposite the village of Mellen, there have been found several rows of piles formed of trunks of trees. The piles are about a foot apart, with an interval of sixteen feet between the rows. These piles support enormous beams, which form a very large area. Between the piles there have been found the skeletons of animals which are no longer to be seen in Switzerland, but no trace of any domestic animals. On removing the mud there have been found an immense number of heads of arrows and spears made of stone, carefully cut and very pointed; poignards made of flint, with buck-horn handles; a battle-axe in stone; clay vases, evidently formed by the hand without the aid of any instrument, and afterwards baked in an oven; and several other articles in stone and baked clay. A human skull has also been found. These remains, which are considered to have belonged to the ancient Celts, are under examination by a commission of antiquarians.

METALLIC PARTICLES IN THE EYE.—A French provincial paper states that a blacksmith, who had been suffering from the impaction of a metallic particle in the cornea, for a week, was relieved by the following collyrium, after every attempt at extracting the splinter from the eye had failed:—Iodine one grain; iodide of potassium ten grains; rose water, three ounces. As soon as this solution was applied to the eye, oxydation of the metallic particle took place, and its brilliancy disappeared. The distressing symptoms about the eye abated, sight was restored, and nothing but a microscopic fragment of metal left in the cornea. A soluble iodide of iron had been formed.—[London Lancet.

CURE FOR CHOLERA.—The "Boston Medical and Surgical Journal" recommends for cholera attacks, a prescription, which, being translated reads as follows:—Laudanum, two drachms, (two teaspoonsful;) spirits of camphor, one drachm; sweet tincture of rhubarb, four drachms; aqua ammonia, (hartshorn,) half a drachm; oil of peppermint, 15 drops. Take a teaspoonful in hot sweetened water every fifteen minutes, to allay the vomiting and pains.

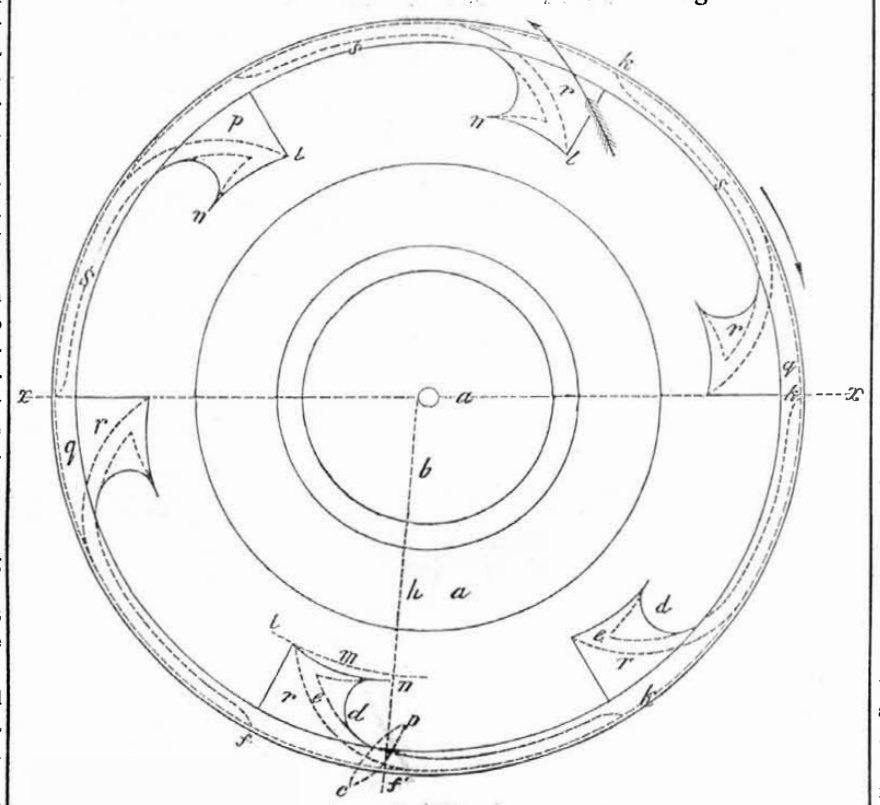
CONSUMPTION.—Dr. Wood, of Philadelphia, argues the protective and curative value of cod liver oil from the fact that the obituary tables give much diminished numbers of deaths from consumption since it came into general use. "Probably," says he, "we have cured 1 in 8 cases of consumption by its use."

TO KEEP FLIES OUT OF ROOMS.—"Bohn's Pictorial Calender" says:—"It was on a subject of general interest that Mr. Spence wrote, when he communicated to the Entomological Society the account of a mode employed by a friend of his in Florence to remove this drawback to the comfort of existence. He tells us that his curiosity was greatly excited on being told by a gentleman residing in the vicinity of that city, that for two or three years he has entirely succeeded in excluding flies from his apartments, though allowing the windows to be wide open for the admission of air. While the sitting and dining rooms of his neighbors swarmed with them, a strict search was necessary to detect even two or three in his apartments. The possibility of excluding flies from a room where the windows were wide open was explained by the curious fact that flies will not pass through the meshes of a net, even though these meshes are more than an inch in diameter. The plan of this gentleman was simply to suspend a net made of light-colored thread to the outside of the window, and although every mesh was large enough, not only to admit one fly, but several flies with expanded wings, to pass through at the same moment, yet from some inexplicable dread of venturing across the mesh-work, these insects were effectually excluded. It is necessary to state, that in order for the plan to succeed, it is essential that the light enter the room on one side only, for it there be an opposite or side window, the flies pass through the net without scruple.

OBSERVING CURRENTS OF THE SEA.—One of the most interesting as well as curious experiments which has been made by Lieut. Maury in his scientific researches, is that, says the "Charleston Courier," for ascertaining the under currents of the ocean. The boat is first anchored, as it were, either by lowering her sounding line to a great depth, or by suspending a large iron kettle so far beneath the surface as to counteract the effects of the surface current upon the boat. The set and velocity of the surface current is then observed. A large wooden box, loaded just sufficiently to make it sink, is then attached to the end of a line of the required length, say one hundred fathoms, and thrown overboard. To the other end of the line is fastened a small empty keg, which, floating lightly upon the waves, prevents the box from sinking beyond the length of the string. The box being under the influence of any current that it may find one hundred fathoms below the surface, carries the cask on the surface in the same direction, and with the same velocity as itself. Mr. Walsh says, in an account of this experiment:—

"It was wonderful indeed to see this barrica (little barrel) move off against wind and sea and surface current at a rate of over one knot the hour, as was generally the case, and on one occasion as much as 1¾ knots. The men in the boat could not repress exclamations of surprise, for it really appeared as if some monster of the deep had laid hold of the weight below and was walking off with it."

NEW RE-ACTION WATER-WHEEL.---Figure 1.

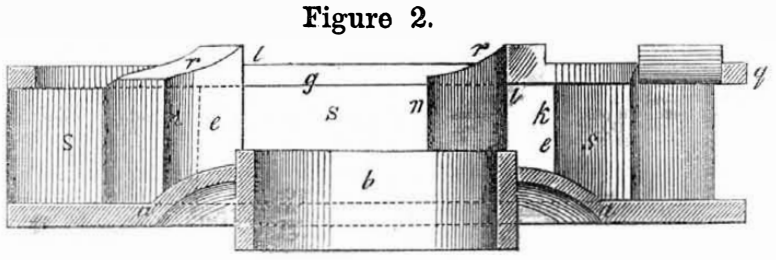


The annexed engravings are views of an improvement in Re-action Water-wheels, for which a patent was granted to Isaac True, of Rochester, Ind., on the 25th of last April. The nature of the invention consists in constructing the buckets of such wheels with projecting hooks on their inner faces, and also with projections or flanges above the rim, so as to afford the most favorable surface for the percussive action of the water by increasing the lever arm; also by cutting away a portion of the rim, to allow the water free and unobstructed access to the buckets. Figure 1 is a plan view of the wheel with the buckets; and figure 2 is a vertical section through the line, $x\,x$, of figure 1. The same letters refer to like parts.

In the figures, a is the bottom of the wheel; b the opening for the shaft, and c c the buckets, each having a hook, d, upon its inner face, and upon its top the curved covering, r. The following is the inventor's description of constructing a wheel of this character as embraced in his patent, it gives the wheel's dimensions, and describes the parts in a satisfactory manner:—

"The bottom, a, of the wheel is made thirty-eight inches in diameter, convex at the center, as seen in the engravings, having the eye, b, sixteen inches in diameter; upon this disk a circumference three feet in diameter is described, which is next divided into six equal parts. Another and concentric circle twenty-nine inches in diameter is then described, this gives the width of the issues after deducting the thickness of the bucket at that point; as a general rule, the issues have one inch of width for each foot of diameter of the wheel.—Then set off upon the verge line, from the points, f, distances, $f\,f'$, equal to one-third

Figure 2.



of the former divisions of that line. A small circle, g, three inches in diameter, is next described, and tangents, h, drawn to this circle, on the side towards which the wheel moves, through the points, f', of the verge line, these lines are the loci of the inner edges of the hooks, d. Then upon the line, h, set off three-quarters of an inch from the verge line, and mark the point seen at i, in the figure, and with a radius of eighteen inches describe an arc of a circle connecting the points, i and k, after which connect the points, i and l, by an arc of the same radius, thus completing the outer face of the bucket. Next upon the line, h, set off from the circle, m, one-fourth of an inch, and without changing the radius connect the points l and n.

The bucket is made half an inch thick to the point, p, which forms the second extremity of the hook, d. The buckets are then trimmed off as seen in the figures, so that their several edges shall be as sharp as is consistent with strength, and forming the re-entrant angle of the hook, d. The buckets are made with the growth of the wood vertical, and are let into the bottom a sufficient distance to ensure strength.

The rim, q, is constructed of strong oak plank, well banded together, and is cut out between the heel, k, of the buckets, and the hook, d, and is left at r, so as to cover the issues and strengthen that portion of the bucket which receives the percussion; the part, r, is curved and raised above the other portion of the rim, q, as seen in figure 2, so as to be effective by the percussion of the water falling upon it. The wheel is fastened together by strong bolts passing through the face rim, hooked portion of the bucket, and bottom of the wheel. The hight of the buckets are made to suit the amount of water required to be used, which is applied in the same manner as to all other wheels of like nature.

The advantages of the peculiar hooked form of my buckets are, that they are the most favorable to receive the percussion and give to the force the greatest arm of lever, the surfaces being such that the force applied is so received that its non-effective component is the smallest practicable; and further, that the remaining portion of the bucket is of a form best calculated to accommodate the re-active force of the water in leaving the bucket. The removal of the rim between the heel and hook of the bucket permits the water to impinge with its full force upon the surfaces constructed to receive it. The curved surface upon the rim, above the issues and the inner surface, $l\,n$, serve as additional hooks or projections for the percussion of the water and add greatly to the facility of moving the wheel."

More information may be obtained by letter addressed to the patentee.

BERRIES AND THE TEETH.—The "Washington Star" reports that the berries on which Lieut. Strain's party were obliged to feed upon during their adventurous exploration of the Isthmus of Darien, contained a strong acid, which has destroyed the enamel of their teeth, and will result in their complete loss.

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